



APPENDIX A

HEALTH AND SAFETY PLAN

SIGNATURE PAGE

Project Name: Removal of Impacted Soil
Location: Flyway Site, Libby, Montana
Project Number: CERCLA-08-2003-0011
Client: Remedium Group, Inc.

REVIEWED AND APPROVED BY:

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Project CIH,
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Date Approved: 9/16/03

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Date Approved: 9/18/03

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1.0 Introduction

The health and safety (H&S) requirements for the Remedium Group, Inc. (Remedium) and subcontractor personnel engaged in the activities associated with the removal of impacted soil at the Flyway site located northeast of Libby, Montana, are defined in this Health and Safety Plan (HASP). This HASP addresses general site H&S requirements and, specifically, removal of impacted soils; soil sampling preparation of a disposal location at the mine; transportation and disposal of materials; and property restoration. Remedium will maintain a copy of the HASP on site.

The HASP identifies the potential hazards present at the Flyway site and the protocols, equipment, and control measures to be implemented in order to protect workers from exposure to these hazards. Background information on the Flyway site and the work tasks associated with this project are described in the Removal Action Work Plan (RAWP) for the project. This HASP describes the key H&S organization and personnel responsible for implementing the HASP; their qualifications and responsibilities; training and medical surveillance requirements for H&S and field personnel, including copies of certificates and other training and medical surveillance documentation for Remedium and subcontractor personnel assigned to the Flyway project; types and levels of personal protective equipment (PPE), control measures required during normal conditions, and contingency PPE and controls to be used for more extreme conditions; site and personal monitoring requirements; site control and security measures; decontamination protocols; reports and record keeping; and emergency response procedures.

The HASP was prepared in accordance with H&S standards, provisions, and requirements specified in the following regulations and guidance documents:

- U.S. Environmental Protection Agency (EPA) Standard Operating Safety Guides. (EPA 1988);
- Title 29 *Code of Federal Regulations* (CFR) Section 1910 (29 CFR 1910), Occupational Safety and Health Administration (OSHA) General Industry Standards;
- 29 CFR 1926, OSHA Safety and Health Regulations for Construction;

- 29 CFR 1910.120 OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER).
- Army Corps of Engineers' Safety and Health Requirements Manual (COE 1996);
- National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards (NIOSH 1997);
- NIOSH, OSHA, U.S. Coast Guard (USCG), EPA. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH 1985);
- American Conference of Governmental Industrial Hygienists (ACGIH) 1999 TLVs® and BEIs®, Threshold Limit Values for Chemical Substances and Physical Agents; Biological Exposure Indices (ACGIH 1999);
- American National Standards Institute (ANSI). Standards for emergency eye wash/showers (ANSI Z358.1-1998), safety glasses (ANSI Z87.1-1989), hard hats (ANSI Z89.1-1997, Type I, Class E), hearing protection (ANSI S3.9-1974); Tyvek® coveralls (ANSI/ISEA 101-1996, sizing requirements), safety boots (ANSI Z41 PT 91 M/F I/75 C/75).

1.1 Site Description

See the project RAWP.

1.2 Planned Activities

The HASP identifies the procedures, and/or policies designed to address H&S for the following work activities at the Flyway site:

- Preparation of site property;
- Excavation of impacted soil;
- Transportation and disposal of waste; and
- Property restoration.

The following individual tasks to complete the removal action activities, described in detail in the project Work Plan, are addressed in **Attachment A, Task Hazard Analysis of this HASP:**

- Mobilization and Site preparation;
- Furnish/install and maintain temporary storage areas and buildings;

- Transportation to and disposal at mine site;
- Surface excavation;
- Backfill and compaction (site restoration); and
- Demobilization.

2.0 HEALTH AND SAFETY ORGANIZATION

Implementing and enforcing H&S requirements is a team effort on the part of Remedium and subcontractor personnel. However, because of the complex and dynamic nature of worker safety policy, a team of individuals devoted specifically to H&S is required to aid Remedium management in administering an effective and efficient program. The following describes the Remedium H&S organizational structure and summarizes the primary areas of responsibility.

2.1 Remedium Management

Remedium management is committed to a safe and healthful work environment. Remedium believes that health and safety is a line responsibility of project management and employees. To that end, management will work toward ensuring that all project management and employees comply with H&S requirements and will institute corrective actions whenever the need for such actions becomes apparent. With advice from Koch Environmental Health, Inc., Remedium management will initiate immediate modifications or corrective actions directly through the Project Manager (PM).

2.2 Health and Safety Officer

The H&S Director, Tom Koch, CIH, is responsible for developing and administering the H&S programs on this site. His duties will include:

- Establishing requirements and criteria for H&S equipment; and
- Briefing management on H&S concerns and corrective actions.
- Develop and approve this HASP;
- Review H&S qualifications of Remedium and subcontractor personnel assigned to perform fieldwork at the Flyway site.
- Participate in the project kick-off meeting and initial site safety meeting.
- Conduct periodic evaluations of the Flyway work site for compliance with policies and procedures specified in this HASP;

- Review project logs, inspection, and air monitoring reports;
- Direct liaison activities among Remedium, OSHA, and other federal, state, and local government agency personnel responsible for H&S issues; and
- Assist management in the investigation of injuries, illnesses, and significant incidents that occur at the Flyway site and provide Remedium management with reports of findings.

2.3 Site Safety Coordinator

Mr. Patrick McGurren has been assigned as the Site Health and Safety Coordinator (SHSC). He will coordinate and monitor site-specific H&S concerns at the site. The SHSO will be on site during all work activities at the Flyway site. Only employees who satisfy the training and medical surveillance requirements specified in this HASP and have a comprehensive understanding of project activities are allowed to serve as a SHSC. The SHSC, in addition to other project-related duties, will have the following primary H&S responsibilities:

- Ensure field activities are conducted in accordance with the provisions and requirements of the HASP;
- Verify that personnel are medically qualified, trained, and have reviewed and are prepared to implement the procedures defined in the HASP;
- Conduct and document initial site-specific training for all site personnel entering designated or contaminated work zones of the Flyway site. The training will cover the use of safety, health, respiratory, and protective equipment, as well as the safety and security procedures to be implemented at the work site;
- Conduct and document follow-up site-specific training for new personnel or visitors, subcontractor personnel entering designed or contaminated Flyway work zones;
- Conduct daily site safety briefings covering specific H&S items for the work to be performed that day;
- Prepare, sign, and maintain training logs on site. The logs are to document personnel in attendance, the date/time of training sessions, topics covered, equipment demonstrated and used by personnel, prohibitions, and other pertinent information;

- Complete daily safety inspection and logs and complete the seven day progress report that will include significant safety and health incidents, air monitoring results, and safety and health issues related to upcoming work;
- Observe PPE use for compliance with the HASP;
- Ensure monitoring of personal exposure in the work area, area monitoring, calibration of instruments, and weekly reporting of air monitoring results;
- Control work site access, establish and maintain (when necessary) work zone boundaries and access points;
- Assess daily decontamination procedures for compliance with the HASP and the Building Cleanup/Decontamination Plan;
- Ensure work sites are clean and free from debris and wastes;
- Ensure hazardous materials and fuels are safely handled, stored, and disposed of and that Material Safety Data Sheets (MSDSs) are on file for all chemicals used on site and that chemical containers are properly labeled per OSHA hazard communication requirements;
- Develop and establish emergency procedures, ensure appropriate emergency response personnel are notified in the case of a imminent health risk or other emergency, and coordinate/assist response personnel as necessary;
- Immediately report verbally any deviations from the HASP, near-misses, injuries, illnesses, and significant incidents that occur at the Flyway site to the PM and Project CIH;
- Assist in the investigation of all accidents, injuries, illnesses, and incidents occurring on the site; and
- Order shutdown of field activities on determination of an imminent H&S hazard, and advise Remedium and subcontractor personnel of the hazard.

As a routine is established for the Flyway site remediation work, many of these responsibilities may be reassigned to other personnel.

2.4 Personnel

Each Remedium employee or contractor must do his/her part to reduce potential hazards in the work environment. All personnel are responsible for taking all reasonable precautions to prevent injury to themselves, fellow workers, subcontractor personnel, site visitors, and the public. On-site workers are required to review and adhere to the provisions

of this HASP and to report all accidents and any unsafe conditions to the SHSC.

Specifically, employees are required to:

- Evaluate the hazards associated with their work assignment;
- Comply with all H&S requirements applicable to their work assignments;
- Report to the Project Manager all unsafe conditions; work-related injuries, or illnesses;
- Participate in training, medical surveillance, and workplace monitoring programs applicable to their work assignments.

NOTE: Any individual observing an operation that presents a clear and imminent danger to the environment or to the health and safety of site personnel, subcontractors, visitors, or the public has the authority to initiate a stop-work action and then notify their supervisor.

2.5 Subcontractor and Vendor Personnel

Implementation of the policies and procedures of the HASP is intended to reduce the potential for injury and illness with respect to all employees. Subcontractors will also benefit. Subcontractors are expected to comply with the requirements of the HASP as well as their own H&S procedures. However, neither Remedium management nor employees can protect subcontractors as well as those parties can protect themselves. If a subcontractor's unsafe practices are observed, the Project Manager is to be immediately informed so that subcontractor supervisory personnel can be advised. Subcontractors will be held financially responsible for any shutdown or delays caused by their employees' unsafe work practices.

3.0 TRAINING AND MEDICAL SURVEILLANCE REQUIREMENTS

Field personnel working within a hazardous waste site designed work zone [e.g., Exclusion Zone (EZ) or Contamination Reduction Zone (CRZ)] during soil excavation, soil sampling and transportation and disposal at the mine site must have successfully completed classroom and field training for hazardous waste site operations, in accordance with OSHA HAZWOPER requirements [29 CFR 1910.120(e)]. Pre-assignment training requirements for the Flyway site include successful completion of 40-hour initial H&S training, 3-day site-supervised fieldwork, and annual 8-hour H&S refresher. In addition, the SHSC will have 8-hour HAZWOPER Supervisor training. At least two field team members will have a current valid certification in standard first aid and cardiopulmonary resuscitation (CPR).

Heavy equipment operators will be qualified on the basis of training and experience as determined by the SHSC. Haul truck operators will have current commercial drivers' licenses (CDLs).

Remediation field personnel are required to participate in a Medical Surveillance Program, in accordance with the requirements specified by OSHA [29 CFR 1910.120(f)] for cleanup operations at uncontrolled hazardous waste sites. All field personnel potentially exposed to hazardous substances/health hazards, such as those in designated work zones, must have completed either a baseline or an annual medical surveillance physical examination and must have been found to be medically fit and qualified to wear respiratory protective equipment prior to their assignment to the Flyway site.

Initial site-specific H&S training is to be conducted by the Health & Safety Officer and other designated and qualified individuals prior to initiating on-site activities. The training will include instruction in the use of safety equipment and PPE, hazards known or potentially present at the work site, each individual's assigned work tasks and responsibilities, monitoring activities, safety and security procedures, review of the HASP, and other safety

requirements unique to the work site. Subsequent to the initial safety trainings, follow-up training sessions will be conducted for new personnel or visitors. Additional follow-up training will also be conducted whenever significant changes in work tasks or work-site conditions may affect worker safety.

Daily "tailgate" safety briefings will be conducted by the Project Manager, Excavation and Construction Contractor, or another qualified designee prior to each day's work activities. The tailgate briefing will address H&S issues specific to the work for the day. All training will be appropriately documented by the Project Manager, including time/dates of the training, topics covered, and signature of individuals attending the training.

Training and medical surveillance requirements for project personnel working at different levels of participation are summarized in Table A-1.

Table A-1, Flyway Health and Safety Training Requirements

| Requirement | | | Employee Participation Level |
|-------------|------|--|------------------------------|
| Medical | i. | Baseline Medical Examination (29CFR1910.120(f)) | X |
| | ii. | Annual Medical Examination (29CFR1910.120(f)) | X |
| | iii. | Asbestos Medical Examination | X |
| Training | i. | 40-hour Initial Health & Safety Training | X |
| | ii. | Qualified for Respirator Use (includes fit test) | X |
| | iii. | Site-Specific Training | X |
| | iv. | Annual 8-hour Refresher Training | X |
| | v. | First Aid* | X |
| | vi. | Annual CPR* | X |

Notes:

- X Indicates training requirement
- At least two persons at the site will have current valid certification to administer first aid and CPR

4.0 HAZARD ASSESSMENT

This section of the HASP provides an assessment of the specific chemical, biological, and assorted physical and construction-related safety hazards anticipated during the work tasks identified in Subsection 1.2. The Task Hazard Analysis in **Attachment A** provides a summary of the work tasks, potential hazard(s) associated with the tasks, and the control measures that will be implemented. Relevant SMSs are referenced.

4.1 Chemical Hazards

This section identifies the hazardous substances of concern that may pose a potential exposure risk to field personnel. The substances include asbestos and total particulates. The principal route of exposure to these substances is inhalation, and to a much lesser degree, ingestion of asbestos fibers. **Table A-2** summarizes the general toxicological information (e.g., potential target organs, health effects, medical monitoring in case of exposure) for these substances. **Table A-3** identifies OSHA-enforceable worker exposure standards, or Permissible Exposure Limits (PELs). Exposure to any of these chemicals in excess of the PELs is prohibited without appropriate respiratory protection.

Table A-2, Potential Chemical Hazards

| Chemical Class/Compounds | Uses | Target Organs | Potential Effects | Medical Monitoring |
|---------------------------------|--|----------------------------|---|--|
| Asbestos | Thermal system insulation; spray-on insulation; transite panels and material; mastic; brake linings; found in vermiculite ore at Libby, Montana mine site. | Lungs Eyes | Dyspnea; restricted pulmonary function Asbestosis; mesothelioma ^(a) Eye irritation | Occupational/general medical history emphasizing prior exposure to asbestos. Medical examination with focus on lung. Chest x-ray. Pulmonary function test. |
| Total Particulate | Naturally occurring; associated with soil disturbance. | Eyes Respiratory System | Eye irritation; upper respiratory system irritation; accumulation in lungs. | |

^(a) Long-term effects generally manifest in 10 to 30 years.

Table A-3, Permissible Inhalation Exposure Levels

| Contaminant | OSHA - PEL/STEL | ACGIH - TLV/STEL | NIOSH REL | IDLH |
|-------------------|---|--|-----------|------|
| Asbestos | .1 f/cc/ 1 f/cc (30 min.) | .1 f/cc A1 | .1 f/cc | Ca |
| Total Particulate | 15mg/m ³ total 5 mg/m ³ respirable | 10 mg/m ³ total 3 mg/m ³ respirable | NE | NE |

Notes:

- A1 = Confirmed human carcinogen
- ACGIH = American Conference of Governmental Industrial Hygienists
- Ca = "Ca" designation indicates that NIOSH recommends substance be treated as a potential human carcinogen and exposures reduced to lowest feasible concentration. Non-enforceable standard.
- f/cc = Fibers per cc
- IDLH = National Institute for Occupational Safety and Health (NIOSH) "Immediately dangerous to life or health." The exposure concentration represents a condition that poses a threat that is "...likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment."
- NE = No level value established.
- PEL = Permissible Exposure Limit (29 CFR 1910.1000). Occupational Safety and Health Administration's PELs, expressed as an 8-hour time-weighted average (TWA) concentration.
- (OSHA)
- STEL = Short-term exposure limit. OSHA and Cal/OSHA 15-minute TWA concentration that should not be exceeded unless otherwise noted.
- TLV = Threshold Limit Value®. American Conference of Governmental Industrial Hygienists' TLVs are non-enforceable guidelines based on an 8-hour TWA. "A1" designation indicates substance recognized by ACGIH as a confirmed human carcinogen; "A2" designation indicates substance is a suspected human carcinogen; "A3" designates carcinogenicity in experimental animals; "A4" designates inadequate evidence to classify substance as carcinogenic in humans or animals; "AS" designates non-carcinogenic in humans based on epidemiologic studies.

Sources: NIOSH 1997; ACGIH 1998; 29 CFR 1910.1000 et seq.

Personnel may also be exposed to fuels for diesel- or gasoline-powered heavy equipment used at Flyway work site to excavate, scrape, compact, haul materials, etc., and water (possibly contain magnesium chloride) used for dust suppression. MSDSs will be maintained and available at the Flyway field trailer for all hazardous materials that are used or stored at the work site. All chemical containers will be labeled according to OSHA hazard communication requirements.

4.2 Biological Hazards

Biological hazards that may be encountered at Libby work sites consist primarily of insects, spiders, and snakes. Individuals with allergies to insects (e.g., bee or wasp stings) should note this fact on the Medical Data Sheet (MDS) they are required to complete and to remind the SHSO prior to the start of field activities. A first aid kit will be available at the work site to treat minor skin irritations, stings, and bites.

Although most spiders are harmless, there are two species that pose potential hazards: the Brown Recluse or violin spider (*Los osceles reclusa*) and the Black Widow (*Latrodectus mactans*). Field personnel should exercise extreme caution when lifting sumps or other covers and when working in dark, dank, enclosed, or heavily covered areas, since spiders are typically found in such microenvironments. Spider bites, although rarely fatal, are often quite painful. Symptoms may include severe pain in the area of the bite, profuse sweating, nausea, abdominal cramps, and difficulty breathing and speaking. First aid procedures for minor insect bites and stings include cold applications; use of soothing lotions (e.g., calamine); and for a bee sting, removal of the venom, stinger, and venom sac. If the bite or sting is suspected to be from a brown recluse or black widow or it produces a severe reaction, implement the following procedures: 1) calm the victim and keep him/her from moving about, preferably in a prone position; 2) remove the venom with a Sawyer

extractor (which should be maintained in the first aid kit); 3) immobilize the bitten extremity and keep it below the heart; 4) if necessary, provide artificial respiration or CPR; 5) and get the victim to a hospital immediately.

Ticks are common in wooded areas and may carry transmittable diseases. The most common are Rocky Mountain spotted fever, transmitted by the wood tick, and Lyme disease, carried by the deer tick. Recommendations for avoiding tick bites are to wear clothing to cover the skin and walk in open areas rather than through brush. At the end of the day, check your body for ticks, especially in areas where their movement might be restricted such as the ankles, shins, and waist. If a tick is attached to the skin, gently pull it out with tweezers, being careful not to squeeze the tick's body. Clean the bitten area with antiseptic and watch for any rash. If possible, save the tick in a bottle for later identification.

Poisonous snakes are found in most states. Snakes will usually be found on slopes and rocks exposed to sunlight. When in "snake country," look before you step, step on top of rocks and logs, and look for snakes before stepping over these obstacles. In areas where poisonous snakes may be present, a snakebite kit should be included in the first aid kit. Personnel should remember that snake bites are preventable events. Most individuals who are bitten see the snake but then take actions that put them at risk. Give a snake a wide berth – move away, and the snake will not chase you. Always look before you step over an object, before you turn over a rock or log, and before you place your hand in a crevice. Complete outdoor tasks during daylight hours. Personnel should always wear protective clothing (heavy leather work gloves, thick leather safety boots, long-sleeved shirts) when working in areas with tall grass or in a potential snake habitat.

All snakebites are serious and should be treated as though from a venomous snake, such as a rattlesnake (triangular head; thick body; pits between the eyes and nostrils; generally 4 to 6 feet long; blotched brownish, gray, or red coloration; characteristic rattles). Seek medical attention immediately. Symptoms of venomous poisoning include swelling,

pain, and tingling at the bite site; tingling and a metallic taste in the mouth; fever, chills, blurred vision, and muscle tremors. Even if the bite is not from a venomous snake, there is a real possibility of tetanus. The following first aid steps should be followed while awaiting emergency medical services.

- Calm the victim and keep hydrated and comfortable,
- Immobilize the affected area and keep at or below the level of heart,
- Remove rings, watches, and other constrictive items before swelling starts, and
- Gently clean the wound with an antiseptic soap and apply sterile dressing; do not apply ice or attempt to cut the bite site or suck out the venom.

The goal of the treatment should be safe and rapid transport to the emergency room without undue anxiety or activity that may accelerate absorption of the venom. A short walk is acceptable if the patient feels up to it and if no alternative is available. A suction device, such as a Sawyer Extractor, can be used to effectively remove up to 30% of the venom if applied within three minutes of the bite. An extractor, which is applied without incision, should be maintained in the first aid kit and used only when there may be a delay in securing emergency medical treatment.

Other animal hazards that could be encountered include wild and domestic animals, primarily dogs. Most wild animals will be frightened away at sight, but the more domestic they are, the less likely they are to run. Consequently, domestic dogs probably represent the greatest threat. However, beware of skunks and porcupines that do not flee or that raise their tails vertically; you could become a target for noxious excretions or quills. The following guidelines are recommended to avoid animal attacks in the field:

- Avoid surprising animals by making noise and make a wide detour around any animals acting abnormally;
- If dogs are present and pose a potential threat, return to the field trailer and notify the SHSO;
- Carry a walking stick to fend off attacks from domestic dogs; and

- Avoid contact with rodents, because they frequently are hosts for Hantavirus and fleas, which carry typhus and the plague. Avoid direct contact or inhalation of dust associated with rodent feces. Cleanup will be conducted using a respirator with high-efficiency particulate air (HEPA) cartridges, gloves, and a Clorox® solution to wet down nesting material that might contain rodent feces or urine. Dispose of fecal material, nesting material, or dead rodents in a sealed bag.

One of the most prevalent hazards to field personnel is sensitivity to poison oak, poison ivy, or poison sumac (members of the *Rhus* species). These plants are common throughout the U.S. Sensitive individuals should avoid contact and if contact is suspected, promptly wash with soap and water. Wear long sleeves and gloves to help avoid contact. Sensitivity varies considerably, but exposure can result in a debilitating rash if not treated and/or allowed to spread. Exposure to the irritating and sensitizing agent, urushiol, is also possible from the smoke of burning *Rhus* plants. In addition, many plant leaves, bark, berries, or flowers are toxic if ingested.

As indicated in **Table A-2**, exposure to chemical hazards will be controlled via the implementation of appropriate administrative and engineering controls (daily safety training, good work practices, general safety rules, dust suppression, cover material), immediately available emergency equipment (first aid, emergency eye wash, fire extinguisher, etc.), and the use of appropriate chemical resistant clothing and respirators when Action Levels are exceeded. Exposure to contaminants is expected to be limited to intrusive activities when the underlying contaminants could be exposed or contact. The SHSO will brief all personnel assigned to the work site of the potential hazards. Perimeter air monitoring of the work site and breathing zone of potentially exposed workers will be conducted throughout the work shift when intrusive activities are underway.

4.3 Physical Hazards

The Task Hazard Analyses in **Attachment A** identify the physical hazards of concern that pose a potential risk to field personnel. The hazards include vehicle traffic, noise, electrical, hand and power tools, fire/explosion, hot work, above and below ground utilities,

heavy equipment operation, material handling, extreme weather conditions (heat stress, lightning, high winds, tornadoes), muscle strains, and slip/trip/fall hazards. Exposure to physical hazards will be controlled through the implementation of appropriate administrative and engineering controls (daily safety training, good work practices, general safety rules, traffic and site control), immediately available emergency equipment, and the use of appropriate PPE.

While most work is not expected to take place near the Kootenai River, workers will be alerted of the hazards involved in working near the water.

Should work be conducted on or near the river bank, the following precautions will be taken:

1. Water hazards will be addressed in the applicable toolbox safety meeting for that day with all affected workers;
2. Personnel working near the bank of the river will be tied off to stationary objects (e.g., tree, heavy equipment, etc.) at least 10 feet from the banks of the water with safe harnesses;
3. A portable life preserver will be stationed near the riverbank and will be readily available for use should personnel accidentally fall in the water.

5.0 PERSONAL PROTECTIVE EQUIPMENT AND CONTROLS

The following subsections identify the appropriate engineering and administrative control measures and PPE for the Flyway work sites. The PPE and control measures are designed to limit the risk of exposure to known or potential hazards at the work site. Significant variations or modifications to these requirements, or additional PPE/controls required to meet additional or unexpected site- and task-specific hazards, will require revisions and/or addenda to this HASP, approved by Project CIH.

5.1 Engineering/Administrative Control Measure

Field personnel will be reminded during the initial site-specific training, subsequent follow-up training, and daily safety briefings to be aware of potential chemical and physical hazards and to implement the hazard controls specified in the Task Hazard Analyses (**Attachment A**). Field personnel will immediately inform the Project Manager, or other supervisory personnel of any unsafe conditions or new hazards they may encounter. The Project Manager is responsible for ensuring that site control measures (e.g., marking, warning signs, placards, erecting barriers, securing and controlling access) and decontamination procedures are implemented.

All hazardous materials and fuels will be stored in appropriately marked/labeled containers, in accordance with the manufacturer's recommendations, and, as approved by the SHSO, stored in secured areas of the work site or the fire locker. All containers will be regularly checked for leaks, and must be clearly labeled, tagged, marked [e.g., signs, labels, Department of Transportation (DOT) placards, etc.] indicating the name/type of hazardous chemical(s) and the H&S hazards. All MSDSs for hazardous materials used on site will be available at the Remedium field trailer.

Outdoor field activities will be scheduled for daytime hours. Activities within work areas required a minimum intensity of 30 footcandles. Areas outside of immediate work

areas (exit ways, walkways, etc.) may require substantially less illumination, normally about 10 footcandles.

General safety rules, as presented in **Table A-4**, will be in effect at the Flyway work site. These rules are designed to minimize potential exposure to work site hazards.

Table A-4 General Safety Rules

- Personnel and authorized visitors at Flyway work site will be required to sign in at the on-site trailer. Visitor access within the work site will be limited to areas outside of designated work zones, or Exclusion Zone (EZ) and Contamination Reduction Zone (CRZ). Personnel authorized to work in or enter the EZ or CRZ will be required to meet training/medical surveillance requirements, review and fully understand the HASP, and agree (in writing) to comply with its requirements.
- Eating, drinking, chewing gum or tobacco, and smoking are prohibited except in designated work site areas.
- PPE will be used at the work site at the protective level specified in the HASP or as required by the SHSC. The SHSC will ensure that personnel are medically qualified and trained in the use of the PPE, and that the PPE is tested/inspected and found to be clean and in good working order.
- Authorized personnel with facial hair (i.e., over one day's growth) will not be allowed in the EZ whenever respiratory protection is required.
- Personnel and authorized visitors will remove and discard all disposable PPE prior to leaving the work site.
- Personnel and authorized visitors in the EZ must go through decontamination, including showers, before leaving the site.
- All personnel will be trained in the site-specific emergency procedures, including the location of emergency equipment, telephone numbers, and hospital route maps.
- Field personnel must use the "buddy system" at all times while working in designated work areas or EZs. If approved by the SHSC, an individual within the EZ may work alone but must be in continuous visual or verbal contact (e.g., cellular phones or two-way radio) with another authorized field team member.
- Equipment will be kept in proper working order and will be kept free of accumulated lubricants, contaminants, or other hazardous or flammable substances.
- Safety briefings will be held daily prior to the beginning of each shift.
- Field activities are to be conducted during daylight hours whenever possible. Any work conducted during evening or nighttime hours will require a minimum light intensity of 30 footcandles.

5.2 Dust Control

Throughout surface excavation, and material transport and disposal activities at the Flyway site, the exposed subsurface soils and areas of dust generation will be thoroughly wetted at all times to control dust generation. A water truck will be used throughout these activities supplemented by sprinkler and pressurized hose. Water and, if necessary; magnesium chloride will be sprayed on haul roads. Detailed dust control information can be found in the Dust Control Plan for the Flyway site (see Appendix D).

5.3 Personal Protective Equipment

The level of Personal Protection Equipment (PPE) required at a work site depends not only on existing conditions and hazards, but also on the specific work tasks to be performed. A PPE Hazard Assessment has been conducted for the Flyway project. To avoid or control exposure to potential chemical and physical hazards, personnel will be provided with, and required to use, PPE that is specific to the individual's work tasks and potential work site hazards. The SHSO and PM will ensure that the required PPE (e.g., protective footwear; and head, eye, face, hearing, and respiratory protection) is tested, inspected, and maintained in serviceable and sanitary condition during the course of field activities. Any defective PPE will be discarded or returned to the manufacturer.

The presence of asbestos and airborne dust concentrations in open, well-ventilated areas of Flyway work site where dust suppression is in place, particularly in the breathing space of field personnel, are not expected to exceed PELs (see Table A-3). The SHSO, or designee, will monitor the breathing space of field personnel during surface excavation and contaminated material transportation and disposal (see Section 6.0) to evaluate the need for respiratory protection.

Table A-5 lists the required PPE for each of the work tasks at the Libby site.

These may be modified by SHSO.

In addition to PPE, the following protective equipment will be on site:

- First aid kits with Sawyer Extractor for bites;
- Safety cans;
- Chemical spill kit;
- Lockout/tagout kit;
- Eyewash bottles in every vehicle;
- Fire extinguishers in every vehicle, at fuel areas, and during hot work;
- Tape, barricades, warning signs, and cones; and
- Cellular telephone or other two-way communication system.

Table A-5. Task-Specific PPE Requirements

| Task | PPE |
|---|---|
| Mobilization and Site Preparation | Hardhat, safety glasses, steel-toe boots, ear plugs, traffic safety vest, work gloves. |
| Furnish/Install and Maintain Temporary Storage Areas | Hardhat, safety glasses, steel-toe boots, ear plugs, traffic safety vest, work gloves, body harness and lanyard in aerial lifts. |
| Transportation to and Disposal at Mine Site | Hardhat, safety glasses, steel-toe boots, ear plugs, traffic safety vest, nitrile surgical gloves, work gloves, polypropylene coverall, rubber boot covers; half-face air purifying respirators (APR) with HEPA cartridges. |
| Surface Excavation | Hardhat, safety glasses, steel-toe boots, ear plugs, traffic safety vest, nitrile surgical gloves, work gloves, polypropylene coverall, rubber boot covers, half-face air purifying respirators with HEPA cartridges. |
| Back Fill and Compaction | Hardhat, safety glasses, steel-toe boots, ear plugs, traffic safety vest, work gloves. |
| Equipment Decontamination in Contaminant Reduction Zone (CRZ) | Rain suit, hardhat, face shield, rubber and steel-toe boots, ear plugs, traffic safety vest, nitrile gloves, polypropylene coverall, rubber boot covers, half-face air purifying respirators with HEPA cartridges. |
| Hot Work | Welding hood with shaded lenses, welding respirator; flame-retardant clothing, (gloves, chaps, aprons), and hearing protection. No disposable protective clothing (e.g., Tyvek®) |

If necessary, NIOSH-approved, half-face air-purifying respirator (APR) with HEPA cartridge will be immediately available at the work sites.

Respiratory protection will be selected and maintained in accordance with the KEHs' respiratory protection program and in conformance with OSHA's revised Respiratory Protection Standard (29 CFR 1910.134). KEH's Respirator Standard Operating Procedure (SOP) form will be completed for each job task requiring respirators, prior to task start-up. Each working employee will be fit tested for a proper face piece seal using the qualitative fit test protocol. The employee is then assigned the same NIOSH-approved brand (MSA,

North, 3M, etc.) type (half-face), and size respirator for their use. Personnel will be required to perform positive and negative fit checks prior to donning the respirator at the beginning of the workday. The SHSC will instruct personnel in proper maintenance procedures, including daily cleaning, inspection, and replacement of cartridges when breathing resistance is encountered.

If conditions are encountered requiring a further upgrade, personnel will evacuate the work site and field activities would be halted until such time as the PM and SHSC establish it is safe to resume work.

6.0 AIR MONITORING

6.1 Background Air Samples

Background air sampling will consist of site perimeter sampling at specific locations on two separate days performed by TEM and work area monitoring by PCM.

6.2 Daily Air Monitoring

KEH will conduct daily perimeter air monitoring during surface excavation and material disposal to verify that asbestos fibers are not being released. KEH will place portable air sampling pumps along the downwind perimeter of the EZ established for each of these tasks. Air samples will be collected according to NIOSH 7400 method and analyzed by PCM.

During surface excavation, contaminated material transport, and disposal at the mine, the SHSO will collect daily personal air samples for asbestos on workers. The SHSO will collect two daily samples from workers on the ground, heavy equipment operators, and/or haul truck drivers. Samples will be collected on a rotating basis among the jobs but one truck driver will be sampled every day.

6.3 Final Air Monitoring

At the conclusion of the project, KEH will also collect air samples at the same locations as its initial background perimeter samples for comparison to the background results.

6.4 Air Monitoring Summary

Table A-6 Air Monitoring Reference Table

| Sample | Sample Location | Test Method | Frequency |
|------------------------------|--|---|------------------------------------|
| Background | To be determined in the field | TEM | 2 day TBD* |
| Daily Perimeter | Same as selected for Background | PCM | Each day of field activity |
| Excavation and Soil Sampling | 10% of staff, minimum of 1 personnel in breathing zone | TWA 30 min. excursion personnel air sampling | Each day of excavation or scraping |
| Final Background | Same locations as Background | TEM | 1 day, TBD* |

*TBD - To be determined.

7.0 SITE CONTROL

7.1 Work Site Access and Security

Access to the Flyway work site will be limited to one truck access and one personnel access point located at the Remedium trailer. All personnel are to check in and sign in at the trailer before accessing the work site. The access point will be posted with appropriate emergency numbers, OSHA poster, and warning, danger, caution, and notice signs, in accordance with 29 CFR 1910.145. Access to Libby work sites will be limited to authorized personnel. Only visitors who have received prior authorization from the Remedium PM will be permitted to enter the work site.

The Project Manager will be responsible for coordinating site access control and security during field activities. Authorized visitors will be advised of the potential hazards at the work site and will not be allowed to enter designated work zones unless they meet all required training/medical qualifications, have reviewed the HASP, and agree to adhere to its requirements. A visitor log will be maintained at the field trailer, and authorized visitors will be required to sign in before entering.

7.2 Work Zones

An Exclusion Zone (EZ), Contamination Reduction Zone (CRZ), and Support Zone (SZ) will be established for those areas of the Flyway site with known or suspected contamination (see Work Plan). These include surface excavation areas and contaminated material disposal areas.

The EZ represents an area of the work site where there is the greatest likelihood of exposure to physical or chemical hazards, and is generally limited to those areas where active work is being performed and there is a potential exposure to toxic or hazardous chemicals through inhalation, dermal/eye contact, and/or ingestion. The final size and

shape of the EZ will be determined by the SHSC based on potential hazards, site-specific conditions, site limitations, and the nature of the work tasks to be performed. The SHSO will mark the EZ with appropriate high visibility fencing and asbestos warning signs during surface excavation, and contaminated material disposal tasks.

The CRZ will be established to provide a buffer zone where personnel can complete personal and equipment decontamination. The personnel decontamination trailer and equipment decontamination pad will be located in the CRZ upwind from the EZ boundary. Personnel working in the equipment decontamination job assignment will be in Level C PPE.

The SZ will constitute the clean safe area used for work site support, field trailer, sanitary facilities (portable toilets and potable water), and administrative activities. The SZ will be located in an area of the work site(s), upwind of the EZ and CRZ.

7.3 Buddy System

Personnel working within the EZ must use the "buddy system" at all times. Individuals within the EZ must be in visual or verbal contact (e.g., cellular phone or two-way radio) with another authorized field team member at the work site. The use of the "buddy system" will ensure field team members have the assistance of a partner able to observe symptoms of chemical exposure, illness, secure emergency assistance, notify management or response agencies in the event of an emergency, and provide other assistance that may be necessary. Enforcement of the buddy system will be the responsibility of the SHSC.

If approved by the SHSC, based on a review of work area conditions and operational activities, verbal or visual contact with another authorized field team member located at the Remedium field trailer but outside or away from the immediate work site may

be sufficient to satisfy the "buddy system" requirement and permit routine activities within the EZ to be conducted by one individual.

7.4 Site Communications Plan

Radios will be with each work crew to communicate with the Remedium field trailer and each other. Telephones will be available at the Remedium site trailer to communicate with agencies and individuals outside of the work sit throughout field activities. In addition, the SHSC will establish emergency signals during the initial site safety briefing prior to initial field activities. Examples include:

EMERGENCY, NEED HELP: grasping throat with hand;

LEAVE AREA IMMEDIATELY: grasping other employee's wrist;

OK, I UNDERSTAND: thumbs up;

NO, I DON'T UNDERSTAND: thumbs down;

EMERGENCY, EVACUATE WORK SITE: continuous blast on compressed air horn or alarm; and

ALL CLEAR: two short blasts on air horn or alarm.

8.0 DECONTAMINATION

The extent of decontamination will depend primarily on the nature and extent of the contamination at a work site. The SHSC can modify procedures, as necessary, thereby adapting them to actual site conditions (e.g., changes in the nature and extent of contamination, PPE level, work tasks, etc.).

8.1 Personnel Decontamination

A negative-pressure personnel decontamination trailer will be provided at the Flyway site for personnel decontamination during surface excavation and contaminated material disposal tasks. The trailer will contain a clean area, showers, and dirty area. All personnel will be required to shower before leaving the site. Tyvek® coveralls worn as outer cover will be disposed of after each use.

All disposable PPE and other equipment will be properly disposed of in 6 mil clear asbestos disposable bags. Any reusable PPE (e.g., outer work gloves, hardhats, safety glasses, rubber boot covers, respirators) that has been on contact with hazardous substances will be decontaminated before being reused.

The following doffing and decontamination sequence will be followed, a flow chart of which will be posted in the decontamination trailer for employees to refer to:

1. Exit EZ through the boot wash outside the decontamination trailer;
2. At the boot wash, clean rubber boot covers using a stiff brush and water;
3. Enter the dirty side of the CRZ decontamination trailer;
4. Remove and hang rubber boot covers on rack provided;
5. Remove outer work gloves, hard hat, safety glasses, traffic safety vest, and steel-toed boots, wipe down with a damp cloth, and set aside on clean shelf or bench;

6. Remove Tyvek® protective coveralls using the inside-out method and place in a lined trash can in the dirty area.
7. Wipe down the outside of the respirator and cartridges (if used), **KEEP IT ON**;
8. Remove inner surgical gloves and dispose of in lined trash can or plastic bag;
9. Wearing respirator enter shower area carrying work gloves, hardhat, safety glasses, traffic safety vests, and steel-toed boots and place on clean shelf or bench;
10. Shower then remove respirator by loosening straps and gently pulling the respirator over the top of the head leaving cartridges on during the workday but remove cartridges and dispose of in a lined container in the shower area at the end of the shift;
11. Carry respirator, work gloves, hardhat, safety glasses, traffic safety vests, and steel-toed boots to the clean area;
12. Store work gloves, hardhat, safety glasses, traffic safety vests, and steel-toed boots in lockers provided in the clean area;
13. Don street clothes;
14. At the end of the shift disassemble, clean, disinfect, and dry respirator in sink provided in clean area, place in clean plastic bag, and store in locker; and
15. Exit the decontamination trailer.

8.2 Equipment Decontamination

Heavy equipment, haul trucks, and other vehicles that have come into contact with potentially asbestos containing soil or vermiculite, will be decontaminated prior to leaving the Flyway site. A bermed decontamination pad with a high-pressure washer and splash curtains to contain overspray will be provided in the CRZ at the Flyway site. Contaminants and dirt will accumulate within the undercarriage, tracks, sprockets, axles, and tires of equipment and trucks. Consequently, it will be necessary to scrape, broom clean, and pressure wash this equipment before it leaves the CRZ.

Reusable equipment and tools will be cleaned by wash. If reusable sampling equipment is used, it will be decontaminated using a decontamination solution and followed by a series of distilled water rinses.

8.3 Disposition of Project-Derived Wastes

All discarded PPE, equipment, plastic sheeting, and other items will be placed in 6 mil clear asbestos disposal bags for disposal. Spent washwater, rinsewaters, and rinseates will be discharged through a 5.0 micro filter into tanks for subsequent disposal at the mine site. The source will determine the ultimate disposition of these solutions in accordance with state and federal regulatory requirements [Resource Conservation and Recovery Act and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)]. Decontamination wastewater may be disposed of at the Flyway site disposal area. The Project Manager will ensure that wastes are properly containerized, secured, stored, and disposed.

9.0 EMERGENCY RESPONSE PROCEDURES

9.1 Introduction

In the event of any on-site emergencies at the Flyway site, the SHSC or Project Manager will have the responsibility and authority for coordinating emergency response activities until proper authorities arrive and assume control. All personnel will follow the HASP emergency procedures.

In the event of an accident or incident, the SHSC will notify the PM and the SHSC as soon as possible. The SHSC will determine the need to evacuate field personnel off site to a safe place of refuge, and notify the appropriate emergency response agencies. Specifically, spills or fires resulting from the mishandling of petroleum products or fuels, and personal injury/illness resulting from exposure to physical hazards are the emergencies most likely to be encountered at the Flyway site. The local fire department and ambulance service will be best suited to handle these emergencies and are located within a reasonable distance to ensure adequate response time. The emergency response procedures presented in this section have been prepared to conform to OSHA standards as specified in 29 CFR 1910.138 as permitted by OSHA 29 CFR 1910.120(1)(1)(ii).

9.2 Pre-Emergency Planning

Pre-emergency planning activities associated with the Flyway project activities include the following:

- Meeting with the local emergency services and hospital personnel to ensure that proposed emergency response activities are compatible with existing emergency response procedures.
- Establishing and maintaining information at the Remedium field trailer for easy access in the event of an emergency. This information will include the following, and it will be the responsibility of the SHSC to ensure the information is available.

- Copies of the HASP,
- An inventory of chemical substances used on site, with corresponding MSDSs,
- Emergency contacts (see **Table A-7**),
- Site personnel records regarding medical treatment concerns (MDSs), and
- Log identifying personnel present on the site each day.

The provisions of the emergency response/contingency plan and emergency response procedures will be included as part of the site-specific training. The response procedures, evacuation routes, types and locations of emergency equipment (fire extinguishers, emergency eye wash/drench shower, first aid kit, etc.) and spill response material (pads, absorbents, tools), emergency alerting/alarm signals, and safe refuge location(s) will be discussed by the SHSC during follow-up or daily safety briefings for specific Flyway work site.

9.3 Emergency Recognition and Prevention

9.3.1 Recognition

Emergency situations are generally recognizable by visual observation. An injury or illness will be considered an emergency if it requires treatment other than first aid (i.e., requires treatment by a physician or other medical professional). A fire, beyond the incipient (beginning) stage, that cannot be put out with a fire extinguisher will be considered an emergency. A chemical release or spill will be considered an emergency when it can affect unprotected on-site personnel, off-site workers, and the environment. The type(s) of materials that could pose a public or environmental hazard if spilled include lubricating oils, hydraulic fluids, fuels, and wastewaters.

9.3.2 Prevention

Remediation will prevent emergencies by observing and complying with the provisions and requirements of the HASP, observing good work practices, proper maintenance of work site(s), inspecting equipment prior to start-up and throughout capping activities, daily safety inspections of the work site and drums/containers, and the use of approved and labeled DOT drums/containers to store fuels or other hazardous materials.

9.4 Safe Distances and Places of Refuge

In the event that the work site must be evacuated, all personnel will immediately stop activities and report to a designated upwind muster point in the SZ. Upon reporting, personnel will remain there until directed otherwise by the SHSC. The SHSC or designee will take roll at this location, using the log, to confirm the location of all field personnel.

9.5 Evacuation Routes and Procedures

An evacuation must be initiated whenever a fire/explosion or significant spill occurs or there is an imminent threat of such an occurrence, or when personnel show signs or symptoms of overexposure to potential site contaminants. In the event of an evacuation, personnel will proceed immediately to the upwind muster point in the SZ, unless doing so would further jeopardize the welfare of workers.

Evacuation procedures will be discussed daily prior to the initiation of any work at the site. Evacuation from the site depends on the location at which work is being performed. In general, the evacuation routes will be based on wind direction, which could change daily. It will be important for personnel to move crosswind until out of the path of smoke or vapors, to not evacuate in the same direction the wind is blowing, and to travel upwind to the predesignated muster point.

9.6 Decontamination Procedures/Emergency Medical Treatment

Decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. It will not be performed if it would further endanger the lives of workers through a delay in obtaining medical treatment, or from the potential hazards due to performing decontamination procedures at or near the site.

9.7 Emergency Alerting and Response Procedures

Because Remedium and subcontractor field personnel will be working in close proximity to each other, hand signals and voice commands will be sufficient to alert site personnel to an emergency. If necessary, the following hand signal communications will be used during activities at the site:

EMERGENCY, NEED HELP: grasping throat with hand.

LEAVE AREA IMMEDIATELY: grasping other employee's wrist.

OK, I UNDERSTAND: thumbs up.

NO, I DON'T UNDERSTAND: thumbs down.

EMERGENCY, EVACUATE WORK SITE: continuous blast on compressed air horn or alarm.

ALL CLEAR: two short blasts on air horn or alarm.

9.8 Spills, Accidental Releases

9.8.1 Response Procedures

The materials likely to be used or stored at the Flyway site in quantities that could present a potential hazard to field personnel or the environment if released or spilled include fuels (gasoline, diesel), lubricating oils, hydraulic fluids, magnesium chloride, and decontamination wastewater. The following spill prevention measures and procedures will be implemented by the SHSC and site personnel in the event of a significant release or spill exceeding 25 gallons:

- Notify the SHSC and PM immediately;
- Take immediate measures to control and contain the spill within the Flyway site boundary, away from storm drains, drainage ditches, and water courses;
- Remove and keep unnecessary personnel away from the spill, and isolate and define the extent of the spill or hazardous area;
- If there are vapors, gases, fumes, particulates, dust, or other airborne hazardous substances present, ensure that personnel remain upwind, and keep them out of low-lying areas where the gases or vapors can concentrate; and
- Prohibit the use of flames, sparks, smoking, or other sources of ignition in the area of the spill, and keep combustibles away from the spilled material.

For small dry spills, the SHSC or designee will shovel the contaminated material into dry containers, cover, and label the container. For small liquid spills, the SHSO or designee will apply absorbent material or pads to the spill and place the absorbent in a labeled container. All reusable tools and equipment used in any cleanup activity must be decontaminated before reuse. Contaminated disposable equipment or materials (sorbents, rags, dirt, etc.) must be discarded in appropriately labeled containers.

The SHSC must file a written report on the Accident/Incident Report form and submit the form to the PM and SHSC within 24 hours of the time of a spill. Gasoline or diesel spills greater than 25 gallons from an aboveground storage tank (any amount from an underground storage tank) must be reported to the Montana Department of Environmental Quality (see Table A-7).

9.8.2 Spill Prevention Measures

The SHSC, in concert with subcontractors, will implement or ensure that the following spill prevention measures are implemented to minimize the potential for spills of fuels, fluids, oils, or other hazardous materials:

- All drums/containers brought on site for storing or containing fuels, fluids, oils, or hazardous materials or wastes must meet DOT standards for their intended uses. The SHSC will inspect drums or containers prior to use, and any personnel using or

transporting such containers onto the Flyway site will be responsible for visually inspecting them prior to their use.

- All drums/containers will be properly labeled as to their contents. Unlabeled containers will be assumed to contain hazardous materials, until confirmed otherwise, and will be subject to appropriate handling.
- The SHSC and PM will work with subcontractors to minimize the number of containers used and transported on site.
- Personnel responsible for drum/container handling activities must be informed of the potential hazards presented by the operations and the importance of spill prevention during site-specific training.
- Damaged or weakened drums/containers that could rupture or leak must be overpacked, or the contents transferred into another DOT-approved or appropriate container.
- Stationary fuel storage tanks are to be diked.
- The SHSC will conduct regular inspections of operational areas to identify existing or potential spill or release conditions and ensure that appropriate corrective actions are implemented.

9.9 Fires

In the event of an explosion, large fire, or small fire that cannot be extinguished by the fire extinguishers available at the Flyway work site, the SHSC will notify the local fire department immediately and evacuate all unnecessary personnel from the work site to a safe upwind refuge area. The SHSC or Plant Manager will work with and advise the fire Incident Commander of the location, nature, and identification of fuels, or hazardous materials stored on site.

For small fires (fires that can be extinguished with a 20-pound ABC fire extinguisher), the SHSC will evacuate all unnecessary personnel from the immediate area threatened by the fire and attempt to extinguish the fire using the on-site fire extinguishers or by smothering the fire. The SHSC will then notify, as needed, local emergency response assistance (fire department, ambulance, emergency medical team).

9.10 Work Site Injury or Illness

The SHSC has the responsibility and authority to coordinate emergency medical response activities until proper emergency medical services (EMS) arrive at the work site. In the event of a minor injury, routine first aid procedures will be used immediately, particularly if blood is present. Medical follow-up exams may be required, depending on the nature of the injury or exposure. First aid kits will be maintained at Flyway work site for treating minor injuries. In the event of a serious injury or illness, field personnel will immediately notify the Emergency Medical Services (EMS) by dialing 911. The SHSC and one other member of the field team will have current certifications in first aid or CPR and will, if necessary, be able to provide emergency care before EMS arrives. Workers with suspected back or neck injuries are not to be moved. If there is evidence of serious trauma or unknown chemical exposure, the employee should be stabilized while awaiting EMS. The SHSC will determine whether there is sufficient contamination to warrant removal of garments and/or spraying the victim with water to remove the contamination.

In the event of respiratory exposure, dermal or eye contact, or ingestion of a potentially toxic substance, the following procedure will be followed:

Respiratory Exposure (Inhalation) – Move to fresh air immediately. Any loss of consciousness or exposure to elevated levels of toxic substances, even if the individual appears to have fully recovered, requires immediate treatment and/or surveillance by a qualified physician.

Dermal Contact – Wash/rinse affected area for at least 15 minutes. An emergency drench system will be available at the decontamination trailer. If clothing is contaminated and the extent of the injuries permit, remove the clothing and flood the skin with potable water. If necessary, the potable water supply provided at the site can also be used to

immediately flush skin or eyes. Ensure that the worker is immediately transported to the local hospital.

Eye Contact – Flush eye(s) with emergency eyewash bottles in vehicles. Transport to decontamination trailer and flush continuously for 15 minutes using portable emergency eyewash, then transport worker to the local hospital. Follow-up treatment or examination by a qualified physician is required.

Ingestion – Immediately transport to the local hospital. If the victim cannot be immediately transported to the emergency facility, call the EMS at 911. It may also be necessary to call the Regional Poison Control Center for instructions while waiting for EMS.

9.11 PPE and Emergency Equipment

Emergency response equipment and PPE will be maintained at the field trailer. The equipment will include at a minimum:

- Telephone or appropriate communication network to allow immediate contact with the fire department, ambulance, and Remedium supervisory personnel;
- Two 20-pound ABC fire extinguishers;
- Spill kit (sorbent materials, pads, booms, pillows and other materials and equipment appropriate to neutralize or contain the types of chemicals/substances present at the work site);
- First aid kit;
- Emergency eye wash/drench station, and/or a potable water source capable of providing sufficient water to flush exposed skin or eye(s) for a period of 15 minutes; and
- Extra sets of PPE consisting of rubber aprons, chemical resistant gloves and coveralls; rubber steel-toed boots, half-face respirator with combination organic vapor/P100 (HEPA) cartridges, safety glasses; hard hat with face shield; and ear plugs.

9.12 Emergency Contacts

Table A-7 provides a list of emergency telephone numbers and contacts. This list will be conspicuously posted in the Remedium field trailer and at work sites near the communication system, making it available to all field personnel. The list will be updated and revised as necessary to ensure the correct telephone numbers for all appropriate emergency assistance personnel, Remedium and local resources are always readily available to field personnel.

9.13 Recordkeeping

In addition to OSHA recordkeeping requirements, Remedium will maintain a file of H&S-related events occurring at the Flyway work site. Any exposure or potential exposure will be recorded, as well as accidents or incidents that require the filing of an Accident/Incident Report (e.g., injuries, illnesses, accidental damage to property, or "near miss" occurrences that could have resulted in personal injury). A copy of an Accident/Incident Report form is attached.

A HASP will be kept on site. An accident/incident reporting form will be kept on site when needed. An OSHA 200 form will also be kept on site. Any incidents or accidents will be noted on daily logs for reporting purposes.

Table A-7. Emergency Telephone Numbers

| | |
|--|----------------|
| Libby, MT Fire Department | 911 |
| Libby, MT Police | 911 |
| Libby, MT Ambulance | 911 |
| Hospital St. Johns Lutheran 350 Louisiana Avenue Libby, Montana | (406) 293-7761 |
| Montana DEQ 2209 Phoenix Ave., Helena, Montana | (406) 444-2544 |

10.0 HASP Approval, Review, and Documentation

Field personnel will review the HASP during the initial Flyway project briefing. The field team member(s) must sign the HASP Acknowledgement of Understanding form. The form will be maintained as part of the project H&S file.

The SHSC is responsible for informing all site personnel of any changes to the HASP and describing the specific details of the changes during safety meetings.

Field personnel will be informed in writing of the results of any monitoring or sampling conducted during remedial and other field activities, or any other information indicating possible work site exposure(s). Any data or other documentation indicating possible employee exposure to chemical hazards exceeding PELs will be forwarded to the employee and, at the employee's request, to his/her personal physician.

11.0 References

- American Conference of Governmental Industrial Hygienists (ACGIH). 1999TLVs® and BELs®, Threshold Limit Values for Chemical Substances and Physical Agents. Cincinnati OH. 1999.
- National Institute for Occupational Safety and Health (NIOSH). NIOSH Pocket Guide to Chemical Hazards. U.S. Department of Health and Human Services Publication No. 97-140. Cincinnati OH. 1997.
- NIOSH, OSHA, U.S. Coast Guard (USCG), U.S. Environmental Protection Agency (EPA), Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. U.S. Department of Health and Human Services (DHHS) Publication 85-115. DHHS Public Health Service, Centers for Disease Control, NIOSH, Washington D.C. 1985.
- U.S. Army Corps of Engineers (COE). Safety and Health Requirements Manual. EM 385-1-1. Washington D.C. 1996.
- U.S. Environmental Protection Agency (EPA). Standard Operating Safety Guides. Emergency Response Division, Environmental Response Branch, Office of Emergency and Remedial Response. Washington D.C. 1988.

ATTACHMENT A
TASK HAZARD ANALYSIS

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|----------------------------|-------|---|
| Mobilization and Site Preparation <ul style="list-style-type: none"> • Movement of material and equipment to site. • Set up of site trailer. • Installation of site electrical. • Connex set up. • Establishment of traffic routes, parking, equipment laydown yards. • Fencing of areas. • Set up of personnel decontamination trailer. • Set up of sanitary facilities. • Set up of equipment decontamination pads. | Hazardous Chemicals | 2 | Minimize quantities of hazardous chemicals to only what is needed. No hazardous chemicals are to be brought on site without a Material Safety Data Sheet (MSDS). Maintain MSDSs for hazardous chemicals used on site, including subcontractors, in the job trailer. Store chemicals in approved containers. Properly label all chemical containers in accordance with the OSHA Hazard Communication Standard. Train employees exposed to hazardous chemicals during site safety briefings. |
| | Biological hazards | | Identify personnel with allergies and make necessary accommodations. Use cabbed equipment whenever available. If you are allergic to plant toxins, be alert and avoid those plants or use gloves and long sleeves when handling them. Check work areas for snakes and spiders. Check items for spiders before donning them to avoid spider bites. Be alert for presence of snakes. Train employees in the recognition of poisonous snakes and spiders indigenous to area. Dust suppression and PPE for work in areas where rodent feces is present. |
| | Traffic/Vehicles | 19,32 | Inspect work and travel area to verify that it will support heavy equipment traffic. Establish marked parking area for personal vehicles and visitors. Follow only the designated traffic routes. Obey all traffic signs and controls. Do not drive over 15 mph in the work area. Cone or barricade work/storage areas. Wear seat belts in moving vehicles at all times. Do not ride in truck beds. Wear traffic safety vests. |
| | Ladders | 28 | Inspect ladders before use; remove damaged ladders from service. Use wooden or fiberglass ladders around electrical lines. Place ladders on substantial base. Do not place ladders in doorways or other locations where they may be knocked over unless barricaded. Tie or block or provide a spotter to hold the ladder while in use. Four to one vertical to horizontal angle. Extend ladder three feet above landing. Only one person on ladder at a time. Maintain "three-point" contact with ladder at all times. Follow proper ladder lifting and carrying procedures; get help when needed. |
| | Noise | 26 | Identify and post high noise level areas. Avoid high noise areas, limit exposure to noise to short periods. Wear hearing protection in areas where noise levels exceed 85dBA such as around heavy equipment (if you have to shout within three feet to communicate, may exceed 85 dBA). Enclose or muffle high noise equipment such as engines, pumps, and compressors. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|--|-------------------------------------|-----|---|
| Mobilization and Site Preparation, (cont). | Electrical shock or Electrocutation | 12 | Temporary power installed per code by qualified electrician. Three-foot clearance around electrical boxes. GFCIs on all temporary cords. Grounding of electrical circuits. Check electrical cords for broken insulation and potential exposure to water/liquids. Thorough training and demonstration of competence to operate equipment. Three pronged grounded plug or double-insulated tools. Unplug (turn off power) or disconnect power source when servicing equipment and lockout/tagout. |
| | Lifting/Back Injury | 45 | Conduct training on and practice safe lifting procedures. Get help when lifting heavy or awkwardly shaped objects. Use mechanical devices for heavy loads. Wear required PPE, including work gloves and steel-toed boots. |
| | Heavy Equipment | 19 | Be aware of the location of heavy equipment at all times. Establish hand signals to communicate with heavy equipment operators. Do not approach a piece of heavy equipment from behind, or without getting the operator's attention first to let him know you are approaching. Stay out of the swing radius of any equipment. Do not work under lifted loads. Never ride on the outside step of heavy equipment. Never stand beside a dump truck while bed is being raised or lowered, never go under a raised bed unless it is blocked. Never get in between a dump truck bed and an open bed door. No horseplay when working around operating equipment of any kind. Only authorized, qualified operators are to operate heavy equipment. All equipment is to be inspected prior to arrival on site, then daily. Equipment will be maintained in good operating condition. Remove defective equipment from service. Rollover Protection (ROP) as required. Ten-foot minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized. Wear the appropriate personal protective equipment including hardhat, eye protection, and steel-toe boots. Orange safety vests required in all areas of operating mobile equipment. Equipment must have functional back-up alarms, mirror, or spotters must be provided. Park equipment on level areas, ground all extensions, set emergency brake or chock wheels. Assume equipment is hot, don't touch exhaust pipes, mufflers, radiators, radiator caps, hoses until equipment has been allowed to cool. Check cooling systems through overflow tank. Shut down equipment in event of hydraulic system failure, contain fluid/fuel line leaks. Leave hydraulic system servicing/repairs to trained mechanic. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|--|----------------------|-----|---|
| Mobilization and Site Preparation (cont.) | Hand and Power Tools | 16 | <p>All hand tools and power tools will be in good repair and will be used only for the task for which they were designed. All tools will be inspected prior to use and any tool that is damaged or defective will be tagged "out-of service" and will be repaired or destroyed.</p> <p>Surfaces and handles will be kept clean and free of excess oil to prevent slipping.</p> <p>Sharp tools will not be carried in pockets.</p> <p>Wrenches will have a good bite before pressure is applied.</p> <p>Only non-sparking tools will be used in atmospheres that exhibit fire or explosive characteristics.</p> <p>Cheater pipes will not be used.</p> <p>Wear required PPE, including work gloves and safety glasses.</p> <p>Do not operate any controls when hands are wet.</p> <p>Thorough training and demonstration of competence to operate equipment is required.</p> <p>GFCIs must be on all electrical cords.</p> <p>Only three-pronged grounded plug or double-insulated tools can be used.</p> <p>Check electrical cords for broken insulation and potential exposure to water/liquids.</p> <p>Machine guards must be in place.</p> <p>Machine guarding must not be removed for any reason except during necessary maintenance and repair.</p> <p>Lockout/tagout prior to work on machinery.</p> <p>Machine guards must be put back in place following maintenance and repair work.</p> <p>Warning signs will be posted at all machine guards indicating that personnel are not to operate the equipment unless guards are in place.</p> <p>Unplug (turn off power) or disconnect power source when servicing equipment and lock out/tag out.</p> <p>Never exceed maximum pressure ratings (30 psi).</p> <p>Never use compressed air to blow dust off of your body.</p> |
| | Slips, trips, falls | 21 | <p>Locate trailers and storage areas on level ground.</p> <p>Keep the work area free of miscellaneous materials and equipment.</p> <p>Conspicuously mark areas where trip hazards are present.</p> <p>Fill in holes or uneven terrain prior to the start of work.</p> <p>Install and maintain proper stairways on trailers, Connexs, etc.</p> <p>Keep stairs free of ice.</p> <p>Practice good housekeeping at all times, always maintain clear view of walking path especially when on stairs, do not walk over or through materials-use walkways. Watch for and avoid muddy, wet, icy areas when walking. Use "three point" rule when mounting and dismounting equipment.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|---------------------------|-------|--|
| Mobilization and Site Preparation (cont.) | Fire/ Explosion | 14,15 | <p>All electrical wiring, lights and other equipment in hazardous locations will be explosion proof.</p> <p>Bonding and grounding will be utilized for the transfer of all fuels and flammable liquids.</p> <p>Fire extinguishers will be kept immediately available during all fire risk activities (e.g. fueling).</p> <p>Refuel equipment in designated areas from approved fuel trucks or storage tanks.</p> <p>Stationary fuel storage tanks are to be diked.</p> <p>No matches, lighted or unlit cigarettes, cigars, cigarettes, pipes, or lighters will be taken into the area where work is being done or in any fueling areas.</p> <p>Approved safety cans will be used to store flammable liquids.</p> <p>Implement an emergency action plan to include employee notification, evacuation routes, assembly areas, and personnel accounting procedures.</p> |
| | Hot Work | 20 | <p>Complete Hot Work Permit and have it signed by the SHSO.</p> <p>Inspect area for flammables and combustibles prior to Hot Work.</p> <p>Test for flammable atmospheres; ventilate to less than 10% LEL.</p> <p>Maintain 20-lb. A:B:C fire extinguisher in welding/hotwork area, and a clear 35-foot radius around area free of flammable/combustible materials.</p> <p>Inspect equipment (e.g., cylinders, regulators, hoses, fittings) for leaks, keep fittings/equipment free of grease, oil or lubricant.</p> <p>Torches are to be lit only with friction spark lighters, and are never to be left unattended when lit.</p> <p>Cutting torches will be outfitted with anti-flashback back devices.</p> <p>Don proper PPE during welding (welding hood with shaded lenses, welding respirator; flame-retardant clothing, welding/cutting goggles, gloves, chaps, aprons), and hearing protection during cutting/grinding activities; no disposable protective clothing (e.g., Tyvek®).</p> <p>Position work to avoid contact with hot metal, falling slag and waste material (i.e., start at the top and work to bottom), do not weld or cut on concrete or gravel.</p> <p>All grinders to be equipped with guards and not to exceed specified grinding disc RPM.</p> <p>Inspect and "ring test" grinding wheels prior to use.</p> <p>Secure all cylinders in upright position with valve caps in place and stored in protected area away from heat, combustible and incompatible materials.</p> <p>Station a fire watch.</p> <p>Inspect area immediately after Hot Work, 30 minutes later, and at the end of the shift to verify that there is not smoldering material.</p> |
| | Pressurized gas cylinders | 15 | <p>Gas cylinder valves are to be closed when not in use</p> <p>Hoses are to be periodically inspected and replaced when worn or damaged</p> <p>Valve protection caps must always be kept on cylinders when they are being removed, stored, or until ready for use.</p> <p>Secure cylinders with chains or store in cylinder rack.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|--|---|-----|--|
| Mobilization and Site Preparation (cont.) | Severe weather conditions (e.g., lightning, high winds) | | Terminate outdoor field activities if high winds, electrical storms, heavy rains, visibility-impairing conditions pose potential safety hazard. Remain alert for warnings, alerts, or signs of impending tornadoes and the location of the closest shelters. Provide shelter or cover, as feasible, and non-slip safety matting in slippery open areas. Secure all equipment and material during high winds. Install and inspect mobile trailer tie-downs. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|--|--------------------|-------|--|
| Furnish/Install and Maintain Temporary Storage Areas and Temporary Storage Buildings <ul style="list-style-type: none"> • Prepare gravel base for storage areas as needed. • Move cleaned materials to storage areas. • Set up temporary structures. • Installation of temporary power. | Biological hazards | | Identify personnel with allergies and make necessary accommodations. Use cabbed equipment whenever available. If you are allergic to plant toxins, be alert and avoid those plants or use gloves and long sleeves when handling them. Check work areas for snakes and spiders. Check items for spiders before donning them to avoid spider bites. Be alert for presence of snakes. Train employees in the recognition of poisonous snakes and spiders indigenous to area. Dust suppression and PPE for work in areas where rodent feces is present. |
| | Traffic/Vehicles | 19,32 | Inspect work and travel area to verify that it will support heavy equipment traffic. Establish marked parking area for personal vehicles and visitors. Follow only the designated traffic routes. Obey all traffic signs and controls. Do not drive over 5 mph in the work area. Cone or barricade work/storage areas. Wear seat belts in moving vehicles at all times. Do not ride in truck beds. |
| | Ladders | 28 | Inspect ladders before use; remove damaged ladders from service. Use wooden or fiberglass ladders around electrical lines. Place ladder on substantial base. Do not place ladders in doorways or other locations where they may be knocked over unless barricaded. Tie or block or provide a spotter to hold the ladder while in use. Four to one vertical to horizontal angle. Extend ladder three feet above landing. Only one person on ladder at a time. Maintain "three-point" contact with ladder at all times. Follow proper ladder lifting and carrying procedures; get help when needed. |
| | Noise | 26 | Identify and post high noise level areas. Avoid high noise areas; limit exposure to noise to short periods. Wear hearing protection in areas where noise levels exceed 85dBA such as around heavy equipment (if you have to shout within three feet to communicate, may exceed 85 dBA). Enclose or muffle high noise equipment such as engines, pumps, and compressors. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|-----------------------------------|-----|---|
| Furnish/Install and Maintain Temporary Storage Areas and Temporary Storage Buildings (cont.). | Electrical shock or electrocution | 12 | <p>Temporary power must be installed per code by qualified electrician.</p> <p>GFCIs required on all temporary cords.</p> <p>Electrical circuits must be grounded.</p> <p>There must be a three-foot clearance around electrical boxes.</p> <p>Check electrical cords for broken insulation and potential exposure to water/liquids.</p> <p>Thorough training and demonstration of competence to operate equipment is required.</p> <p>Three-pronged grounded plug or double-insulated tools only can be used.</p> <p>Unplug (turn off power) or disconnect power source when servicing equipment and lockout/tagout.</p> |
| | Lifting/Back Injury | 45 | <p>Conduct training on and practice safe lifting procedures.</p> <p>Get help when lifting heavy or awkwardly shaped objects.</p> <p>Use mechanical devices for heavy loads.</p> <p>Wear required PPE, including work gloves and steel-toed boots.</p> |
| | Heavy Equipment | 19 | <p>Be aware of the location of heavy equipment at all times.</p> <p>Establish hand signals to communicate with heavy equipment operators.</p> <p>Do not approach a piece of heavy equipment from behind, or without getting the operator's attention first to let him know you are approaching.</p> <p>Stay out of the swing radius of any equipment.</p> <p>Do not work under lifted loads.</p> <p>Never ride on the outside step of heavy equipment.</p> <p>Never stand beside a dump truck while bed is being raised or lowered; never go under a raised bed unless it is blocked.</p> <p>Never get in between a dump truck bed and an open bed door.</p> <p>No horseplay when working around operating equipment of any kind.</p> <p>Only authorized, qualified operators are to operate heavy equipment.</p> <p>All equipment is to be inspected prior to arrival on site, then daily inspection is required thereafter.</p> <p>Equipment maintained in good operating condition. Remove defective equipment from service.</p> <p>Rollover Protection (ROP) is required, as appropriate.</p> <p>Ten-foot minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized.</p> <p>Wear the appropriate personal protective equipment including hardhat, eye protection, and steel-toe boots.</p> <p>Orange safety vests are required in all areas of operating mobile equipment.</p> <p>Equipment must have functional back-up alarms and mirror, or spotters must be provided.</p> <p>Park equipment on level areas, ground all extensions, set emergency brake or chock wheels.</p> <p>Assume equipment is hot, don't touch exhaust pipes, mufflers, radiators, radiator caps, hoses until equipment has been allowed to cool.</p> <p>Check cooling systems through overflow tank.</p> <p>Shut down equipment in event of hydraulic system failure, contain fluid/fuel line leaks.</p> <p>Leave hydraulic system servicing/repairs to trained mechanic.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|----------------------|-----|--|
| Furnish/Install and Maintain Temporary Storage Areas and Temporary Storage Buildings (cont.). | Hand and Power Tools | 16 | <p>All hand tools and power tools will be in good repair and will be used only for the task for which they were designed. All tools will be inspected prior to use and any tool that is damaged or defective will be tagged "out-of service" and will be repaired or destroyed.</p> <p>Surfaces and handles will be kept clean and free of excess oil to prevent slipping.</p> <p>Sharp tools will not be carried in pockets.</p> <p>Wrenches will have a good bite before pressure is applied.</p> <p>Only non-sparking tools will be used in atmospheres, which exhibit fire or explosive characteristics.</p> <p>Cheater pipes will not be used.</p> <p>Wear required PPE, including work gloves and safety glasses.</p> <p>Thorough training and demonstration of competence to operate equipment is required.</p> <p>Do not operate any controls when hands are wet; GFCIs on all electrical cords are required.</p> <p>Three-pronged grounded plug or double-insulated tools is required.</p> <p>Check electrical cords for broken insulation and potential exposure to water/liquids.</p> <p>Machine guards must be in place.</p> <p>Machine guarding must not be removed for any reason except during necessary maintenance and repair.</p> <p>Lockout/tagout must be performed prior to work on machinery.</p> <p>Machine guards must be put back in place following maintenance and repair work.</p> <p>Warning signs will be posted at all machine guards indicating that personnel are not to operate the equipment unless guards are in place.</p> <p>Unplug (turn off power) or disconnect power source when servicing equipment <u>and</u> lockout/or tagout.</p> <p>Never exceed maximum pressure ratings (30 psi).</p> <p>Never use compressed air to blow dust off of your body.</p> |
| | Slips, trips, falls | 21 | <p>Locate trailers and storage areas on level ground.</p> <p>Keep the work area free of miscellaneous materials and equipment.</p> <p>Conspicuously mark areas where trip hazards are present.</p> <p>Fill in holes or uneven terrain prior to the start of work.</p> <p>Install and maintain proper stairways on trailers, Connexs, etc.</p> <p>Keep stairs free of ice.</p> <p>Practice good housekeeping at all times, always maintain clear view of walking path especially when on stairs, do not walk over or through materials-use walkways. Watch for and avoid muddy, wet, icy areas when walking. Use "three point" rule when mounting and dismounting equipment.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|------------------------|-------|--|
| Furnish/Install and Maintain Temporary Storage Areas and Temporary Storage Buildings (cont.). | Falls from aerial lift | 7,40 | <p>Only trained, qualified personnel are to operate aerial lifts.</p> <p>Review manufacturer's operation instructions prior to use.</p> <p>Provide personal fall arrest harness and lanyard.</p> <p>Train and certify personnel in basket in personal fall arrest systems.</p> <p>All aerial lifts are to be inspected prior to arrival on site, then daily thereafter.</p> <p>Survey route of travel for obstructions, overhead hazards.</p> <p>Ten-foot minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized.</p> <p>Set aerial lift brake and chock wheels on incline prior to use.</p> |
| | Cranes and rigging | 38,41 | <p>Any cranes that are to be used on the site will require proof of annual inspection by a qualified competent person within the last 12 months.</p> <p>Cranes/booms/hoists must be inspected by a qualified competent person prior to use after each installation.</p> <p>The crane/boom/hoist must be inspected and tested daily prior to each use by the operator and the inspection documented to the Project Files. Any defects must be corrected before use.</p> <p>Rated load capacities, recommended operating speeds, and special hazard warnings or instructions must be conspicuously posted on all equipment. Instructions or warnings must be visible from the operator's station.</p> <p>No modification to any cranes/hoists will be acceptable without the written approval of the manufacturer or designed by a Registered Professional Engineer.</p> <p>The weights of all loads must be known or a load indicating device must be used.</p> <p>Only qualified, licensed crane operators can be used.</p> <p>Ten-foot minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized.</p> <p>At no time can any worker on the ground be allowed under a load or within the swing radius of a load.</p> <p>Ground personnel will not attempt to guide or move suspended loads except with the use of "tag lines".</p> <p>Accessible areas within swing radius of a crane must be barricaded to prevent employees from being struck or crushed by the crane.</p> <p>Crane operators will follow the direction of the designated rigger/signalman.</p> <p>All rigging must be inspected by a competent person and marked as inspected before each use and annually.</p> <p>All rigging must be clearly labeled as to capacity. All rigging will be stored in a loft or equivalent area where it will not be exposed to the elements.</p> <p>Wire ropes must be kept in good repair without deformities. Softeners must be used when wire rope is used for hoisting in a basket configuration. Use the 3:6 rule on broken wires.</p> <p>Synthetic slings must be carefully maintained. Any synthetic sling whose red warning has been exposed will be removed from service.</p> <p>Knots will not be tied in rigging.</p> <p>All riggers/signalmen must be trained and provided with rigging handbook.</p> <p>Provide safety latches on all load hooks.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|--|-----|--|
| Furnish/Install and Maintain Temporary Storage Areas and Temporary Storage Buildings (cont.). | Severe weather conditions (e.g. lightning, high winds) | | Terminate outdoor field activities if high winds, electrical storms, heavy rains, visibility-impairing conditions pose potential safety hazard. Remain alert for warnings, alerts, or signs of impending tornadoes and the location of the closest shelters. Provide shelter or cover, as feasible, and non-slip safety matting in slippery open areas. Secure all equipment and material during high winds. Install and inspect mobile trailer tie-downs. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|--|-------|--|
| Transportation to and Disposal at Mine Site <ul style="list-style-type: none"> Truck decontamination Haul material to mine. Grading contaminated material at the mine. Covering contaminated material at the mine. | Burns, lacerations, contusions, eye injury during decontamination of equipment using steam or pressure washers | | Wear proper PPE (hardhat, face shields, ear plugs, rubber apron, gloves, steel-toed boots, Tyvek® coverall) Never point nozzle at personnel. Operate only within prescribed decon area. |
| | Traffic/Vehicles | 19,32 | Implement traffic control plan. Haul truck drivers must have CDLs. Inspect work and travel area to verify that it will support heavy equipment traffic. Establish marked parking area for personal vehicles and visitors. Follow only the designated traffic routes. Obey all traffic signs and controls. Do not drive over 5 mph in the work area or 20 mph on mine access road. Cone or barricade work/storage areas. Wear seat belts in moving vehicles at all times. Do not ride in truck beds. Wear traffic safety vests. |
| | Inhalation of airborne asbestos fibers and total particulates | 8,43 | Implement dust control plan. Material must be thoroughly wetted prior to transport. Loads must be covered. PPE per Table B-6. Truck operators are to remain in truck cab, with window closed during loading and hauling. Personnel are to work or stand on the upwind side of contamination. |
| | Noise | 26 | Identify and post high noise level areas. Avoid high noise areas, limit exposure to noise to short periods. Wear hearing protection in areas where noise levels exceed 85dBA such as around heavy equipment (if you have to shout within three feet to communicate, may exceed 85 dBA). Enclose or muffle high noise equipment such as engines, pumps, and compressors. |
| | Lifting/Back Injury | 45 | Conduct training on and practice safe lifting procedures. Get help when lifting heavy or awkwardly shaped objects. Use mechanical devices for heavy loads. Wear required PPE, including work gloves and steel-toed boots. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|-----------------|-----|--|
| Transportation to and Disposal at Mine Site (cont.) | Heavy Equipment | 19 | <p>Be aware of the location of heavy equipment at all times.</p> <p>Establish hand signals to communicate with heavy equipment operators.</p> <p>Do not approach a piece of heavy equipment from behind, or without getting the operator's attention first to let him know you are approaching.</p> <p>Stay out of the swing radius of any equipment.</p> <p>Do not work under lifted loads.</p> <p>Never ride on the outside step of heavy equipment.</p> <p>Never stand beside a dump truck while bed is being raised or lowered, never go under a raised bed unless it is blocked.</p> <p>Never get in between a dump truck bed and an open bed door.</p> <p>No horseplay when working around operating equipment of any kind.</p> <p>Only authorized, qualified operators are to operate heavy equipment.</p> <p>All equipment is to be inspected prior to arrival on site, then daily.</p> <p>Equipment must be maintained in good operating condition. Remove defective equipment from service.</p> <p>ROP as required.</p> <p>Ten-foot minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized.</p> <p>Wear the appropriate personal protective equipment including hardhat, eye protection, and steel-toe boots.</p> <p>Orange safety vests are required in all areas of operating mobile equipment.</p> <p>Equipment must have functional back-up alarms, mirror, or spotters must be provided.</p> <p>Park equipment on level areas, ground all extensions, set emergency brake or chock wheels.</p> <p>Assume equipment is hot, don't touch exhaust pipes, mufflers, radiators, radiator caps, hoses until equipment has been allowed to cool.</p> <p>Check cooling systems through overflow tank.</p> <p>Shut down equipment in event of hydraulic system failure, contain fluid/fuel line leaks.</p> <p>Leave hydraulic system servicing/repairs to trained mechanic.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|--|-----|---|
| Transportation to and Disposal at Mine Site (cont.) | Slips, trips, falls | 21 | <p>Locate trailers and storage areas on level ground.</p> <p>Keep the work area free of miscellaneous materials and equipment.</p> <p>Conspicuously mark areas where trip hazards are present.</p> <p>Fill in holes or uneven terrain prior to the start of work.</p> <p>Install and maintain proper stairways on trailers, Connexs, etc.</p> <p>Keep stairs free of ice.</p> <p>Practice good housekeeping at all times, always maintain clear view of walking path especially when on stairs, do not walk over or through materials-use walkways. Watch for and avoid muddy, wet, icy areas when walking. Use "three point" rule when mounting and dismounting equipment.</p> |
| | Severe weather conditions (e.g. lightning, high winds) | | <p>Terminate outdoor field activities if high winds, electrical storms, heavy rains, visibility-impairing conditions pose potential safety hazard.</p> <p>Remain alert for warnings, alerts, or signs of impending tornadoes and the location of the closest shelters.</p> <p>Provide shelter or cover, as feasible, and non-slip safety matting in slippery open areas.</p> <p>Secure all equipment and material during high winds.</p> <p>Install and inspect mobile trailer tie-downs.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|--|--|-------|--|
| Surface Excavation <ul style="list-style-type: none"> Clearing a grubbing Remove 6 to 18 inches of soil Load haul trucks Hand digging Soil sampling Equipment decontamination | Burns, lacerations, contusions, eye injury during decontamination of equipment using steam or pressure washers | | Wear proper PPE (hardhat, face shields, ear plugs, rubber apron, gloves, steel-toed boots, Tyvek® coverall) Never point nozzle at personnel. Operate only within prescribed decon area. |
| | Traffic/Vehicles | 19,32 | Implement traffic control plan. Haul truck drivers must have CDLs. Inspect work and travel area to verify that it will support heavy equipment traffic. Establish marked parking area for personal vehicles and visitors. Follow only the designated traffic routes. Obey all traffic signs and controls. Do not drive over 5 mph in the work area. Cone or barricade work/storage areas. Wear seat belts in moving vehicles at all times. Do not ride in truck beds. Wear traffic safety vests. |
| | Underground utilities | 34 | Prior to performing excavation, clear and flag utility locations. Hand-probe locate utilities prior to excavation. Support exposed piping to prevent breakage. |
| | Inhalation of airborne asbestos fibers and total particulates | 8,43 | Implement dust control plan. Material must be thoroughly wetted prior to transport. Loads must be covered. PPE per Table B-6. Truck operators are to remain in truck cab, with window closed during loading and hauling. Personnel are to work or stand on the upwind side of contamination. |
| | Heat Stress | 18 | Monitor work site temperatures; Monitor workers for early signs of heat stress, take body temperatures as necessary; Follow heat stress work rest cycles per SMS. Provide drinking water, work breaks, scheduling during cooler parts of day. |
| | Noise | 26 | Identify and post high noise level areas. Avoid high noise areas, limit exposure to noise to short periods. Wear hearing protection in areas where noise levels exceed 85dBA such as around heavy equipment (if you have to shout within three feet to communicate, may exceed 85 dBA). Enclose or muffle high noise equipment such as engines, pumps, and compressors. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|----------------------------|---------------------|-----|--|
| Surface Excavation (cont.) | Lifting/Back Injury | 45 | <p>Conduct training on and practice safe lifting procedures.</p> <p>Get help when lifting heavy or awkwardly shaped objects.</p> <p>Use mechanical devices for heavy loads.</p> <p>Wear required PPE, including work gloves and steel-toed boots.</p> |
| | Heavy Equipment | 19 | <p>Be aware of the location of heavy equipment at all times.</p> <p>Establish hand signals to communicate with heavy equipment operators.</p> <p>Do not approach a piece of heavy equipment from behind, or without getting the operator's attention first to let him know you are approaching.</p> <p>Stay out of the swing radius of any equipment.</p> <p>Do not work under lifted loads.</p> <p>Never ride on the outside step of heavy equipment.</p> <p>Never stand beside a dump truck while bed is being raised or lowered, never go under a raised bed unless it is blocked.</p> <p>Never get in between a dump truck bed and an open bed door.</p> <p>No horseplay when working around operating equipment of any kind.</p> <p>Only authorized, qualified operators are to operate heavy equipment.</p> <p>All equipment is to be inspected prior to arrival on site, then daily.</p> <p>Equipment must be maintained and in good operating condition. Remove defective equipment from service.</p> <p>Rollover Protection (ROP) as required.</p> <p>Ten-foot minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized.</p> <p>Wear the appropriate personal protective equipment including hardhat, eye protection, and steel-toe boots.</p> <p>Orange safety vests are required in all areas of operating mobile equipment.</p> <p>Equipment must have functional back-up alarms, mirror, or spotters must be provided.</p> <p>Park equipment on level areas, ground all extensions, set emergency brake or chock wheels.</p> <p>Assume equipment is hot, don't touch exhaust pipes, mufflers, radiators, radiator caps, hoses until equipment has been allowed to cool.</p> <p>Check cooling systems through overflow tank.</p> <p>Shut down equipment in event of hydraulic system failure, contain fluid/fuel line leaks.</p> <p>Leave hydraulic system servicing/repairs to trained mechanic.</p> |
| | Slips, trips, falls | 21 | <p>Locate trailers and storage areas on level ground.</p> <p>Keep the work area free of miscellaneous materials and equipment.</p> <p>Conspicuously mark areas where trip hazards are present.</p> <p>Fill in holes or uneven terrain prior to the start of work.</p> <p>Install and maintain proper stairways on trailers, Conexs, etc.</p> <p>Keep stairs free of ice.</p> <p>Practice good housekeeping at all times, always maintain clear view of walking path especially when on stairs, do not walk over or through materials-use walkways. Watch for and avoid muddy, wet, icy areas when walking. Use "three point" rule when mounting and dismounting equipment.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|-------------------------------|--|-----|---|
| Surface Excavation (cont.) | Severe weather conditions (e.g., lightning, high winds) | | <p>Terminate outdoor field activities if high winds, electrical storms, heavy rains, visibility-impairing conditions pose potential safety hazard.</p> <p>Remain alert for warnings, alerts, or signs of impending tornadoes and the location of the closest shelters.</p> <p>Provide shelter or cover, as feasible, and non-slip safety matting in slippery open areas.</p> <p>Secure all equipment and material during high winds.</p> <p>Install and inspect mobile trailer tie-downs.</p> |
| | Water Hazard | | <p>Conduct safety meetings regarding work on or near the Kootenai River.</p> <p>Assure that any worker performing a task within 10 feet of the river be tied off to a stationary object with a secure harness.</p> <p>Position a portable life preserver on the bank near where any daily work is being conducted.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|---|---------------------|-------|--|
| Backfill and Compaction <ul style="list-style-type: none"> • Loading and hauling backfill • Grading backfill | Traffic/Vehicles | 19,32 | Implement traffic control plan. Haul truck drivers must have CDLs. Inspect work and travel area to verify that it will support heavy equipment traffic. Establish marked parking area for personal vehicles and visitors. Follow only the designated traffic routes. Obey all traffic signs and controls. Do not drive over 5 mph in the work area. Cone or barricade work/storage areas. Wear seat belts in moving vehicles at all times. Do not ride in truck beds. Wear traffic safety vests. |
| | Noise | 26 | Identify and post high noise level areas. Avoid high noise areas, limit exposure to noise to short periods. Wear hearing protection in areas where noise levels exceed 85dBA such as around heavy equipment (if you have to shout within three feet to communicate, may exceed 85 dBA). Enclose or muffle high noise equipment such as engines, pumps, and compressors. |
| | Lifting/Back Injury | 45 | Conduct training on and practice safe lifting procedures. Get help when lifting heavy or awkwardly shaped objects. Use mechanical devices for heavy loads. Wear required PPE, including work gloves and steel-toed boots. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|-------------------------------------|--|-----|---|
| Back Fill and Compaction (cont.) | Heavy Equipment | 19 | <p>Be aware of the location of heavy equipment at all times.</p> <p>Establish hand signals to communicate with heavy equipment operators.</p> <p>Do not approach a piece of heavy equipment from behind, or without getting the operator's attention first to let him know you are approaching.</p> <p>Stay out of the swing radius of any equipment.</p> <p>Do not work under lifted loads.</p> <p>Never ride on the outside step of heavy equipment.</p> <p>Never stand beside a dump truck while bed is being raised or lowered, never go under a raised bed unless it is blocked.</p> <p>Never get in between a dump truck bed and an open bed door.</p> <p>No horseplay when working around operating equipment of any kind.</p> <p>Only authorized, qualified operators are to operate heavy equipment.</p> <p>All equipment is to be inspected prior to arrival on site, then daily.</p> <p>Equipment must be maintained and be in good operating condition. Remove defective equipment from service.</p> <p>ROP as required.</p> <p>Ten-foot minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized.</p> <p>Wear the appropriate personal protective equipment including hardhat, eye protection, and steel-toe boots.</p> <p>Orange safety vests are required in all areas of operating mobile equipment.</p> <p>Equipment must have functional back-up alarms, mirror, or spotters must be provided.</p> <p>Park equipment on level areas, ground all extensions, set emergency brake or chock wheels.</p> <p>Assume equipment is hot, don't touch exhaust pipes, mufflers, radiators, radiator caps, hoses until equipment has been allowed to cool.</p> <p>Check cooling systems through overflow tank.</p> <p>Shut down equipment in event of hydraulic system failure, contain fluid/fuel line leaks.</p> <p>Leave hydraulic system servicing/repairs to trained mechanic.</p> |
| | Slips, trips, falls | 21 | <p>Locate trailers and storage areas on level ground.</p> <p>Keep the work area free of miscellaneous materials and equipment.</p> <p>Conspicuously mark areas where trip hazards are present.</p> <p>Fill in holes or uneven terrain prior to the start of work.</p> <p>Install and maintain proper stairways on trailers, Connexs, etc.</p> <p>Keep stairs free of ice.</p> <p>Practice good housekeeping at all times, always maintain clear view of walking path especially when on stairs, do not walk over or through materials-use walkways. Watch for and avoid muddy, wet, icy areas when walking. Use "three point" rule when mounting and dismounting equipment.</p> |
| | Severe weather conditions (e.g. lightning, high winds) | | <p>Terminate outdoor field activities if high winds, electrical storms, heavy rains, visibility-impairing conditions pose potential safety hazard.</p> <p>Remain alert for warnings, alerts, or signs of impending tornadoes and the location of the closest shelters.</p> <p>Provide shelter or cover, as feasible, and non-slip safety matting in slippery open areas.</p> <p>Secure all equipment and material during high winds.</p> <p>Install and inspect mobile trailer tie-downs.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|--|---------------------|-------|---|
| Demobilization <ul style="list-style-type: none"> • Movement of material and equipment offsite. • Take down of site trailer. • Removal of site electrical. • Connex take down. • Removal of fencing. • Removal of personnel decontamination trailer. • Removal of sanitary facilities. • Take down of equipment decontamination pads. • Removal/dismantlement of temporary pole barns. | Hazardous Chemicals | 2 | Remove hazardous chemical to off-site storage for future use. Send MSDSs with chemicals. Verify proper containers and labeling of chemicals prior to removal. Train employees exposed to hazardous chemicals during site safety briefings. |
| | Biological hazards | | Identify personnel with allergies and make necessary accommodations. Use cabbed equipment whenever available. If you are allergic to plant toxins, be alert and avoid those plants or use gloves and long sleeves when handling them. Check work areas for snakes and spiders. Check items for spiders before donning them to avoid spider bites. Be alert for presence of snakes. Train employees in the recognition of poisonous snakes and spiders indigenous to area. Dust suppression and PPE for work in areas where rodent feces is present. |
| | Traffic/Vehicles | 19,32 | Inspect work and travel area to verify that it will support heavy equipment traffic. Establish marked parking area for personal vehicles and visitors. Follow only the designated traffic routes. Obey all traffic signs and controls. Do not drive over 5 mph in the work area. Cone or barricade work/storage areas. Wear seat belts in moving vehicles at all times. Do not ride in truck beds. Wear traffic safety vests. |
| | Ladders | 28 | Inspect ladders before use; remove damaged ladders from service. Use wooden or fiberglass ladders around electrical lines. Place ladder on substantial base. Do not place ladders in doorways or other locations where they may be knocked over unless barricaded. Tie or block or provide a spotter to hold the ladder while in use. Use four to one vertical to horizontal angle. Extend ladder three feet above landing. Only one person can be on ladder at a time. Maintain "three-point" contact with ladder at all times. Follow proper ladder lifting and carrying procedures; get help when needed. |
| | Noise | 26 | Identify and post high noise level areas. Avoid high noise areas, limit exposure to noise to short periods. Wear hearing protection in areas where noise levels exceed 85dBA such as around heavy equipment (if you have to shout within three feet to communicate, may exceed 85 dBA). Enclose or muffle high noise equipment such as engines, pumps, and compressors. |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|------------------------|-----------------------------------|-----|---|
| Demobilization (cont.) | Electrical shock or electrocution | 12 | <p>Temporary power must be removed per Code by qualified electrician.</p> <p>GFCIs must be on all temporary cords.</p> <p>Check electrical cords for broken insulation and potential exposure to water/liquids.</p> <p>Thorough training and demonstration of competence to operate equipment is required.</p> <p>Three-pronged grounded plug or double-insulated tools must be used.</p> <p>Unplug (turn off power) or disconnect power source when servicing equipment and lockout/tagout.</p> |
| | Lifting/Back Injury | 45 | <p>Conduct training on and practice safe lifting procedures.</p> <p>Get help when lifting heavy or awkwardly shaped objects.</p> <p>Use mechanical devices for heavy loads.</p> <p>Wear required PPE, including work gloves and steel-toed boots.</p> |
| | Heavy Equipment | 19 | <p>Be aware of the location of heavy equipment at all times.</p> <p>Establish hand signals to communicate with heavy equipment operators.</p> <p>Do not approach a piece of heavy equipment from behind, or without getting the operator's attention first to let him know you are approaching.</p> <p>Stay out of the swing radius of any equipment.</p> <p>Do not work under lifted loads.</p> <p>Never ride on the outside step of heavy equipment.</p> <p>Never stand beside a dump truck while bed is being raised or lowered; never go under a raised bed unless it is blocked.</p> <p>Never get in between a dump truck bed and an open bed door.</p> <p>No horseplay when working around operating equipment of any kind.</p> <p>Only authorized, qualified operators are to operate heavy equipment.</p> <p>All equipment is to be inspected prior to arrival on site, then daily thereafter.</p> <p>Equipment must be maintained in good operating condition. Remove defective equipment from service.</p> <p>Use ROP as required.</p> <p>Ten feet minimum clearances from power lines as described in OSHA regulations must be followed or the lines must be de-energized.</p> <p>Wear the appropriate personal protective equipment including hardhat, eye protection, and steel-toe boots.</p> <p>Orange safety vests are required in all areas of operating mobile equipment.</p> <p>Equipment must have functional back-up alarms, mirror, or spotters must be provided.</p> <p>Park equipment on level areas, ground all extensions, set emergency brake or chock wheels.</p> <p>Assume equipment is hot, don't touch exhaust pipes, mufflers, radiators, radiator caps, hoses until equipment has been allowed to cool.</p> <p>Check cooling systems through overflow tank.</p> <p>Shut down equipment in the event of hydraulic system failure, contain fluid/fuel line leaks.</p> <p>Leave hydraulic system servicing/repairs to trained mechanic.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|------------------------|----------------------|-----|--|
| Demobilization (cont.) | Hand and Power Tools | 16 | <p>All hand tools and power tools will be in good repair and will be used only for the task for which they were designed. All tools will be inspected prior to use and any tool that is damaged or defective will be tagged "out-of service" and will be repaired or destroyed.</p> <p>Surfaces and handles will be kept clean and free of excess oil to prevent slipping.</p> <p>Sharp tools will not be carried in pockets.</p> <p>Wrenches will have a good bite before pressure is applied.</p> <p>Only non-sparking tools will be used in atmospheres, which exhibit fire or explosive characteristics.</p> <p>Cheater pipes will not be used.</p> <p>Wear required PPE, including work gloves and safety glasses.</p> <p>Operators will be trained thoroughly and will demonstrate competence to operate equipment.</p> <p>Do not operate any controls when hands are wet.</p> <p>GFCIs must be on all electrical cords.</p> <p>Three-pronged grounded plug or double-insulated tools will be used.</p> <p>Check electrical cords for broken insulation and potential exposure to water/liquids.</p> <p>Machine guards must be in place.</p> <p>Machine guarding must not be removed for any reason except during necessary maintenance and repair.</p> <p>Lockout/tagout must be done prior to work on machinery.</p> <p>Machine guards must be put back in place following maintenance and repair work.</p> <p>Warning signs will be posted at all machine guards indicating that personnel are not to operate the equipment unless guards are in place.</p> <p>Unplug (turn off power) or disconnect power source when servicing equipment <u>and</u> lockout/tagout.</p> <p>Never exceed maximum pressure ratings (30 psi).</p> <p>Never use compressed air to blow dust off of your body.</p> |
| | Slips, trips, falls | 21 | <p>Locate trailers and storage areas on level ground.</p> <p>Keep the work area free of miscellaneous materials and equipment.</p> <p>Conspicuously mark areas where trip hazards are present.</p> <p>Fill in holes or uneven terrain prior to the start of work.</p> <p>Install and maintain proper stairways on trailers, Connex boxes, etc.</p> <p>Keep stairs free of ice.</p> <p>Practice good housekeeping at all times, always maintain clear view of walking path especially on stairs, do not walk over or through materials-use walkways. Watch for and avoid muddy, wet, icy areas when walking. Use "three point" rule when mounting and dismounting equipment.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|------------------------|---------------------------|-------|---|
| Demobilization (cont.) | Fire/Explosion | 14,15 | <p>All electrical wiring, lights and other equipment in hazardous locations will be explosion proof.</p> <p>Bonding and grounding will be utilized for the transfer of all fuels and flammable liquids.</p> <p>Fire extinguishers will be kept immediately available during all fire risk activities (e.g. fueling).</p> <p>Refuel equipment in designated areas from approved fuel trucks or storage tanks.</p> <p>Stationary fuel storage tanks will be diked.</p> <p>No matches, lighted or unlit cigarettes, cigars, pipes, or lighters will be taken into the area where work is being done or in any fueling areas.</p> <p>Approved safety cans will be used to store flammable liquids.</p> <p>Implement an emergency action plan to include employee notification, evacuation routes, assembly areas, and personnel accounting procedures.</p> |
| | Hot Work | 20 | <p>Complete Hot Work Permit and have it signed by the SHSO.</p> <p>Inspect area for flammables and combustibles prior to Hot Work.</p> <p>Test for flammable atmospheres; ventilate to less than 10% LEL.</p> <p>Maintain 20-lb. A:B:C fire extinguisher in welding/hotwork area and a clear 35-foot radius around area free of flammable/combustible materials.</p> <p>Inspect equipment (e.g., cylinders, regulators, hoses, fittings) for leaks, keep fittings/equipment free of grease, oil or lubricant.</p> <p>Torches are to be lit only with friction spark lighters, and are never to be left unattended when lit.</p> <p>Cutting torches will be outfitted with anti-flashback devices.</p> <p>Don proper PPE during welding (welding hood with shaded lenses, welding respirator; flame-retardant clothing, welding/cutting goggles, gloves, chaps, aprons), and hearing protection during cutting/grinding activities; no disposable protective clothing (e.g., Tyvek®).</p> <p>Position work to avoid contact with hot metal, falling slag and waste material (i.e., start at the top and work to bottom), do not weld or cut on concrete or gravel.</p> <p>All grinders are to be equipped with guards and are not to exceed specified grinding disc RPM.</p> <p>Inspect and "ring test" grinding wheels prior to use.</p> <p>Secure all cylinders in upright position with valve caps in place and store in protected area away from heat, combustible and incompatible materials.</p> <p>Station a fire watch.</p> <p>Inspect area immediately after Hot Work, 30 minutes later, and at the end of the shift to verify that there is not smoldering material.</p> |
| | Pressurized gas cylinders | 15 | <p>Gas cylinder valves are to be closed when not in use.</p> <p>Hoses are to be periodically inspected and replaced when worn or damaged.</p> <p>Valve protection caps must always be kept on cylinders when they are being removed, stored, or until ready for use.</p> <p>Secure cylinders with chains or store in cylinder rack.</p> |

Attachment A, Task Hazard Analysis

| Work Task | Hazard | SMS | Control Measures |
|------------------------|---|-----|---|
| Demobilization (cont.) | Severe weather conditions (e.g., lightning, high winds) | | <p>Terminate outdoor field activities if high winds, electrical storms, heavy rains, visibility-impairing conditions pose potential safety hazard.</p> <p>Remain alert for warnings, alerts, or signs of impending tornadoes and the location of the closest shelters.</p> <p>Provide shelter or cover, as feasible, and non-slip safety matting in slippery open areas.</p> <p>Secure all equipment and material during high winds.</p> <p>Install and inspect mobile trailer tie-downs.</p> |

Notes:

| | | |
|------|---|---|
| CDL | = | Commercial driver's license |
| dbA | = | decibel in A-weighted scale |
| DRI | = | Direct reading instrument |
| GFCI | = | Ground fault circuit interrupter |
| LEL | = | Lower explosive limit |
| mph | = | miles per hour |
| MSDS | = | Material safety data sheet |
| OSHA | = | Occupational Safety and Health Administration |
| PJM | = | Project Manager |
| PPE | = | Personal protective equipment |
| psi | = | pounds per square inch |
| ROP | = | Rollover protection |
| RPM | = | Revolutions per minute |
| SHSO | = | Site Health and Safety Officer |
| SMS | = | Safety Management Standard |

ATTACHMENT B

AIR MONITORING/INDUSTRIAL HYGIENE PROJECT PLAN

1.0 Introduction

The following describes the proposed air monitoring/industrial hygiene strategies to be provided by Koch Environmental Health, Inc. (KEH) for Remedium in support of the removal of the important soil at the Flyway site. Please note that this sampling plan has been designed to incorporate project-specific changes and/or provide flexibility in altering the plan to safely meet the intent and goals of the project. This plan has been developed by a Certified Industrial Hygienist/Asbestos Project Designer and may be altered in the field based on actual project conditions. Any changes to this plan will be coordinated in the field based on actual project conditions. Any changes to this plan will be coordinated through Remedium, will be implemented only after approval by SHO and the EPA. KEH will support Remedium in achieving the objective of the project in the most safe and healthful manner possible and in meeting or exceeding OSHA, EPA, and State of Montana requirements for asbestos control. This plan will apply to asbestos removal/decontamination in all work areas at the Flyway site, although changes or alterations may be made in some work areas as conditions deem them necessary. Target work areas will include the following:

- Surface Excavation, general; and
- Soil Sampling.

KEH Industrial Hygienists will use the most efficient sampling and analytical methods and will provide those services necessary to meet the safe completion of each project. KEH will conduct all asbestos work using personnel trained and certified in accordance with requirements of the EPA and the State of Montana with respect to Asbestos Professionals.

2.0 Air Monitoring Plan

All air monitoring for this project will be conducted in accordance with the project requirements with the intent of meeting the goals of the project in a safe and healthful manner. The KEH Project Manager will coordinate all sampling activities with the designated Remedium Representative to ensure that all affected removal areas and appropriate monitoring points (i.e., clean rooms) are monitored by an experienced asbestos professional. All visual inspections and air monitoring will be conducted in accordance with EPA and State of Montana requirements regarding asbestos control. The air sampling plan for this project involves monitoring via either Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM) method.

KEH will work within the project requirements to implement a sampling strategy designed to efficiently and economically determine airborne asbestos (fiber) levels in and around each work area in the interest of protecting human health and the environment. PCM air samples will be collected as appropriate utilizing the NIOSH 7400 Method, A Counting Rules. PCM samples will be used as a general means for monitoring airborne fiber levels in and around each work area, although this type of analysis is non-specific for asbestos fibers. PCM monitoring is useful in tracking and determining airborne fiber levels and provides an efficient and economic means to assess airborne fiber concentrations as they related to asbestos removal.

TEM analysis is specific for asbestos fibers and can be used as a tool for determining actual asbestos concentrations in air samples collected. TEM sampling will be used for asbestos determination in airborne samples as necessary and may be used for perimeter background. In some cases, both PCM and TEM samples may be collected simultaneously (i.e., side-by-side) for use in determining effective fiber control strategies.

Perimeter air samples will be collected for TEM analysis prior to intrusive work to determine ambient or background airborne contaminant levels. Perimeter air samples will

be collected on two separate days prior to intrusive work at the site at locations determined in the field. Perimeter samples will be collected during each day during soil excavation for PCM analysis.

2.1 Sample Collection

Phase Contrast Microscopy (PCM) samples will be collected on 25 millimeter (mm) mixed-cellulose ester membrane filters, 0.8 micron pore size, with an effective collection area of 385 mm². Transmission Electron Microscopy (TEM) samples will be collected on 25 millimeter (mm) mixed-cellulose ester membrane filters, 0.45 micron pore size, with an effective collection area of 385 mm². All filters used by KEH are pre-assembled by the manufacturer in three-stage, conductive sampling cassettes with extension cowl. Asbestos removal is a dynamic process and may necessitate altering sampling strategies regarding the numbers, locations, and types (e.g., PCM, TEM) of samples collected in and around each work area.

Depending upon weather conditions high volume air samples will be collected at flow rates between 2.0 and 10.0 liters per minute (L/m) for PCM and TEM sampling. Low volume pumps for personal samples will be operated at .5 to 2.5 liters per minute. KEH Representatives will use professional judgment and expertise in determining sample flow rates and locations based upon project conditions. Flow rates will be recorded at the beginning and at the end of the sampling period utilizing an airflow rotameter calibrated against a primary flow calibration instrument (DryCal DC Lite #DCL739). Start times and stop times will be recorded for all sampling periods. KEH will maintain a primary flow calibration instrument on-site at all times during this project and will maintain calibration records on site for review by the Remedium representative.

2.2 Laboratory Analysis

To ensure state-of-the-art quality control, all analysis will be conducted by RJ Lee Group, Inc., accredited by the American Industrial Hygiene Association (AIHA) and/or the National Voluntary Laboratory Accreditation Program (NVLAP) for analysis of PCM and TEM air samples. Results of all air samples will be posted in or around the affected work area within 24 hours for (PCM) or upon laboratory forwarding of analysis for TEM.

2.3 CIH Review and Sign-Off

Upon completion of the project, a final technical report will be generated by KEH that describes the project activities, air sample results, and visual inspection data. All standard operating procedures and technical reports have been developed by KEH's staff CIH to ensure that our clients are provided reliable technical data. All technical reports for this project will be developed, reviewed, and signed by a CIH.

2.4 Equipment

KEH maintains a complete inventory of air sampling pumps, calibration equipment, and sampling media necessary to conduct the work at multiple projects and multiple project locations. Our inventory for air sampling consists of up to 40 high volume, adjustable sampling pumps, up to 30 low-volume battery-operated pumps, and all of the necessary support equipment, including calibrated rotameters, primary flow standards and associated electrical and personal protective equipment. All of our rotameters are calibrated against a primary flow calibration standard (Dry Cal DC Lite) quarterly. An inventory of up to 20 high-volume pumps and 10-15 low-volume (i.e., battery) pumps will be maintained on site to support air monitoring requirements for the project.

KEH utilizes Thomas brand electric high-volume sampling pumps capable of running at 1-15 liters per minute continuously for multiple shifts. KEH battery pumps have a typical run-discharge cycle of approximately 16 hours for full shift coverage when work area

conditions do not allow for electric pumps. Multiple battery pump and battery packs will be maintained on site to adequately monitor the project on a daily basis and allow for charge-discharge cycles, pump failures, and backup capabilities. The KEH inventory also holds other types of IH sampling equipment including respirable particulate cyclones, real-time sampling instrumentation, exposure monitoring apparatus, and various types of media for air sampling a variety of contaminants. Our excellent working relationships with nationwide safety suppliers and laboratories enable us to secure other types of sampling equipment as necessary to conduct any type of industrial hygiene evaluation.



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Ref:8EPR-PS

September 9, 2003

To: Jim Christiansen, RPM Libby Asbestos RPM

From: Mary Goldade, EPA Regional Chemist

RE: Comments on Draft KDC Flyway Site Remedial Action Work Plan for Libby, Montana

I have reviewed the Quality Assurance Project Plan (QAPP) & Sampling and Analysis Plan (SAP) submitted as appendices to the *Draft Kootenai Development Company Flyway Site; Libby, Montana Removal Action Work Plan [RAWP]* (August 2003). In assessing these documents, I treated them and looked for supporting detail as a pair. Therefore, my comments are provided below and are intended to indicate areas where the information contained in the pair of documents do not adequately meet with EPA guidelines. My comments do not address the sampling locations as you have indicated the number of grids and their locations are being revised to better reflect historical data as we speak. Finally, my comments focus on the key issues as I could not spend any time reviewing the details.

General Comments

Generally, I found this document lacking in much of the detail necessary to discern how and why sampling and analysis will take place. I have attempted to summarize the deficiencies in this section.

we write
Table?

1. Data Quality Objectives. The QAPP lists the for which the DQO process is intended (page 5-9) but the subsequent section is lacking in providing the information necessary to properly assess the cleanup as it is conducted (rationale, accurate historical data and rationale to indicate how we know where to excavate, accurate language explaining that excavations will be performed on a grid-by-grid basis, specific fiber concentration levels and/or PLM-VE levels that indicate contamination or clearance at a particular work area, etc.) That is, this document does not currently provide sufficient background and information to allow a reader unfamiliar with the past activities at the site to understand why the proposed sampling and analysis is justified.
2. Sampling and Analysis Programs. It appears that there are several sampling and analysis programs planned as part of this project: ambient air monitoring, personal air monitoring, asbestos in soil confirmation sampling, PCBs in soil sampling. For clarity, the documents must be revised and organized to differentiate among the various sampling programs. Each sampling program must be treated separately and must discretely describe the rationale for the program and detail the requirements for each sampling and analysis program. The requirements for each program must include all the components required by the DQO process: the reason for the work (sampling and/or excavation), the boundaries of the work (site boundaries and work boundaries such as grids/exclusion zones), the sampling locations and the reason why those sampling locations were identified, the method of analysis and supporting references and/or copies of SOPs, components in Comment #6, field and analytical raw data requirements.
3. Action Limits. I could only find one action limit referred to in the documents, but it is not consistent among documents. That is, in the SAP the value used to determine if confirmation soils will be further excavated is greater than or equal to 1% by PLM (SOP # SRC-Libby-03). The RAWP indicates >1%. This must be clarified. Further, the PLM SOP reports qualitative values at non-detect, trace (<0.2%), and between 0.2-1%. Will these data be used in any way? Finally, specific action limits for perimeter and personal air samples must be stipulated in the planning documents. All action limits must be accompanied by a discussion of the specific action that must be taken if action limits are exceeded. NIOSH
G-1
ask CDM
what to
do
4. Soil excavation depth. The section that provides a cursory history of activities performed in 2001 does not provide detail about how deep excavation went. However, a statement on page 2-1 (RAWP) indicates that excavation continued as long as "visible material" was present. In contrast, the RAWP (Section 3.2.5) and the SAP limit excavation to a soil depth of 4 feet, without providing the supporting scientific justification. The supporting rationale for limiting the depth is probably sound, but must be provided. DQOS
US
5. PARCC. PARCC is an antiquated term that attempts to indicate all the QA/QC measures necessary to ensure data generation that is of known quantity and quality. It is only useful if the PARCC parameters include proper assessment criteria and recommend appropriate corrective actions when these criteria are not met. No corrective actions are provided in the text. With the exception of Completeness, assessment criteria are not provided thereby making this section useless. Additionally, I am of the opinion that the Eli...

completeness criteria should be eliminated. The data planned for generation must meet the project goals, not an arbitrary numerical goals. The project goals include (but are not limited to) numeric clearance/cleanup criteria.

6. Analytical Methods. The QAPP & SAP must provide the following for each analysis method planned for use: action limit, action taken if action limit exceeded, required detection limit, analytical method number and reference (including preparation method number and reference and/or counting rules references). The planning documents sometimes mention the use of PCM but are not clear about which samples should undergo this analysis or which PCM method will be employed.
7. Air Sample Analysis. According to the limited information provided in the HASP (pages A-25 & A-26), background air samples will be analyzed via TEM ISO 10312. This is acceptable. However, all work area monitoring (perimeter samples) call only for PCM analysis. This is not acceptable. TEM ISO 10312 analysis must be performed on all perimeter air samples so that they may be appropriately compared with the background samples. Likewise, the Final Air Monitoring samples must also be analyzed via the same TEM ISO 10312 method. Note that the cited air sampling methods will likely have to be revised since NIOSH 7400 will not be used for perimeter air samples. Cite the appropriate method.
8. Splits. EPA should be given the opportunity to have duplicate/replicate samples submitted for their independent analysis. For soils, splits of well homogenized samples should be submitted to EPA. Replicate air samples (a 2nd pump set up along side the 1st pump) should be submitted to EPA. Frequency of these samples (based on practability and QA/QC goals) can be discussed.
9. Analytical Laboratory. RJ Lee Laboratory is listed as the laboratory planned for analysis. **EPA does not support this laboratory selection.** EPA has issued a general warning about data generated by that laboratory. Further, I was under the impression that RJ Lee was an asbestos laboratory; and am therefore, uncertain as to their capabilities in performing PCB analysis; another laboratory should be listed for that work. Finally, the Laboratory Quality Assurance Project Plans (LQAPs) must be submitted for all laboratories planned to participate in the project.
10. Analytical Raw Data Package. The following information must be provided to EPA for their records. Note that the raw data package must be complete such that any reviewer may assess whether the analysis was performed in accord with methods cited in the planning documents (QAPP/SAP). Supporting documentation is not limited to investigative samples alone, but must also include all supporting documentation for QC samples and must also provide evidence of all other required QA activities such as calibrations, equipment maintenance, etc. Finally, all copies must be fully legible and pages must be sequentially numbered; the total number of pages submitted in each raw data package must be noted on the 1st page.

PCB
samples
8081 - called
- 11
N10514

splits
No RJ Lee

- a. Copies of signed Chain-of-Custody (COC) documents and air bills for each sample submitted.
 - b. Copies of final reports signed by supervisory personnel certifying the results of the analysis as accurate and meeting SOP and QA criteria.
 - c. Copies of pertinent laboratory generated SOPs, not just copies of a formal agency generated method.
 - d. Case Narrative that indicates any issues/concerns with sample shipment, custody, integrity, preparation, analysis. Also, the narrative must state whether modifications were made to the lab SOP and/or the formal agency generated method at anytime or on certain samples. The modifications to the SOP and the reasons for the modifications must appear in the narrative.
 - e. List of all equations/algorithms used in calculations.
 - f. Copy of original raw bench sheets and electronic count sheets (if generated) showing the results of specific point count operations and the results of fiber characteristic determinations. AT NO TIME MAY ANY RAW BENCH SHEETS BE DESTROYED EVEN AFTER INFORMATION IS TRANSFERRED TO ELECTRONIC FORMS.
 - For each fiber identified as asbestiform, the raw data bench sheet should contain documented information on the characteristics of the fiber (e.g. morphology, refractive index, color, etc. that caused the analyst to confirm the identity of the fiber. This also includes all EDS spectra, SAED diffraction patterns, electron micrographs used in fiber identification.
 - g. Reports and raw data that indicate the frequency and results of QA analyses (such as duplicate analyses and reference slide analyses).
11. Soil PCBs. The SAP (Section 3.3) states that one soil sample will be collected near the old electrical transformer for PCB analysis. If only one sample can be afforded, this should be a composite sample which is made up of at least 5 grab samples in the area of the transformer and focusing/biasing sampling in areas that appear oil stained. If analysis of 5 grab samples in the area that appear oil stained is a possibility, this would be better. Think on this size.
12. Documentation/Records. EPA must be provided legible/readable copies of all information generated during the investigation. That includes (but may not be limited to): all electronic databases, copies of all field log book pages and log/note sheets, chain of custody forms, analytical raw data package, communication logs, etc. Note that the QAPP (page 5-22) indicates that analytical results are maintained in the Libby version 2 secured project database. This conflicts with statements made elsewhere in the documents. While EPA concurs with the concept of maintaining all data collected at the

↳ Field Forms, etc.

Flyway within Libby2, the information planned for collection as presented in these planning documents is insufficient to be imported into Libby2. This must be resolved.

13. **Quality Control Samples.** There is no place in the planning documents where QC samples planned for collection are unambiguously identified. That is, some QC samples are appropriate for some sampling and analysis methods, but inappropriate for others. The documents must list the QC samples to be collected and for which sampling and analysis program. Further the following must be defined for each QC sample: its purpose, frequency of collection, acceptance criteria, corrective action taken if outside the acceptance criteria.

→ RAWP
Sec # 8

Sub → Name
PCBS → PE sample
we provide
TER → not for
we provide

Specific Comments

Some specific details about areas where the SAP and QAPP would be improved are provided below.

1. RAWP, Figure 1-3. Most of the text appearing on the General Site Layout is illegible. The date of generation of the survey plan should be provided. And, the date listed in the "Notes" section should include a year.
2. RAWP, Page 1-5, last sentence. This sentence indicates that no further action pertaining to the archaeological survey is necessary. Consider including a process that allows for provisions if something is found opportunistically, if required by state law.
3. QAPP, Section 1.1 Project Organization. The Project Coordinator (PC) and the Quality Assurance Manager/Coordinator (QAM) are identified as the same person. This is not desirable; however, if the Project Coordinator will not be participating in any of the field, sampling, or analysis activities it may be feasible for the PC/QAM to remain objective. If the PC/QAM cannot remain objective and removed from data generation activities, the QAM position must be assigned to a person independent of the data generation activities. Also, there are many references to that "appropriate personnel" must be notified under certain circumstances; however the personnel and the circumstances are often vague. An organization chart that includes internal communication lines within W.R. Grace and its contractors and external lines of communication with EPA and other entities must be provided.
4. QAPP, page 5-5, 3rd bullet. Revise this bullet to read: "Assuring that planning documents are implemented as written or documented with appropriate scientific justification, if changed/modified"
5. QAPP, page 5-7. Mr. Patrick McGurran is identified as the sample coordinator for all onsite PCM analyses. This is the first time onsite PCM analysis is mentioned. Detail about the onsite laboratory operations must be provided in the QAPP. Additionally, an LQAP for the onsite laboratory must be submitted to EPA for review. Further, the 2nd

bullet under Mr. McGurren's responsibilities states: "Preparing and shipping samples to the analytical laboratories". Clarify whether the word "preparing" refers to "packaging" or to "sample preparation" as specified in SOP #ISS-Libby-01 (Rev.7). Where will sample preparation of soils take place? This must be stated in the planning documents.

6. QAPP, page 5-7. This section states that "Remedium will provide a QA/QC review of the field data package..." This is an important step; however, both the review steps to be taken and a list of the information contained within the field data package must presented in the planning documents.
7. QAPP, Section 1.1.3, 1st bullet. Revise this bullet to read: "....QA audits are documented and implemented."
8. QAPP, Section 1.4.2.2, Accuracy. This section and others in the QAPP indicate LCS and MS analyses for accuracy assessments. Indicate which of the planned analyses will uses these QC samples in accuracy assessments. EPA would like to see a table listing the QC sample, its precision and/or accuracy criteria and the analytical methods appropriate for that QC analysis. Sec
Soil
9. QAPP, Section 1.4.2.3. This section indicates that no field measurements will be performed during this investigation. Won't meteorological data such as wind direction and speed be collected? Please clarify. If so, indicate where and how the information will be collected and documented.
10. QAPP, page 5-14, Reporting limits. This section is inadequate. Not only does it not provide guidelines on minimum reporting limits and detection limits/sensitivity, it erroneously defines a reporting limit as minimum value without a qualifier. Further, it suggests that the laboratory will monitor sensitivity with performance checks. Please clarify how this happens for each different analytical method that will be performed.
11. QAPP, Section 1.5. It is unclear what training is required for field workers, lab personnel, management personnel. This must be clarified.
12. QAPP, Section 2.3.1.3. This section indicates an SOP for packaging of samples in the field, but no SOP number or SOP is attached. Please provide this information for review.
13. QAPP, Section 3.1.1. Revise this section to state that EPA may perform onsite field and/or laboratory audits or visits at anytime.
14. QAPP, Section 3.2, State in this section that EPA will receive copies of all management reports.
15. QAPP, Section 4.1, 2nd paragraph. This section states: "Data validation consists of examining the sample data package(s) against pre-determined standardized requirements." The pre-determined standardized requirements must either be stated here or an SOP

containing that information be referenced and attached to the RAWP.

16. QAPP, Section 4.2. RJ Lee Group is identified for DQO reconciliation. This is not appropriate. As presented, Remedium is identified at the data user and evaluator and DQO developers. If Remedium personnel are truly capable of these tasks, then they should be identified to determine if DQOs were met. The analytical laboratory (RJ Lee Group) must document any deviations to the analytical methods cited in the SAP/QAPP and indicate their impact to the project requirements in the case narrative which is contained within the analytical raw data package. However, the laboratory is in no position to assess and/or report on activities performed in the field. Remedium must take responsibility for evaluating whether project DQOs were achieved for the completed project which includes the quality of field and laboratory activities.
17. SAP, Section 2.1. This section *almost* provides enough information for an independent review to assess the air monitoring plan. However, it falls short in describing even in the most general of terms how sample locations will be identified. General guidelines for the collection of perimeter samples in the "most safe and healthful means possible" such as location with respect to wind direction and working zones must be provided in the documents.
18. SAP, Section 3.1. Reference the soil collection SOP. Also, in accord with the SOP, soil is collected at the surface (0-1") depth interval. If the desired depth interval is 0-6", provide the rationale for this. Further, if 0-6" depth is desired, a trowel may not be the best sampling implement, unless used like a coring device. A soil core would provide an even distribution of soil across the depth interval. If this coring procedure is adopted, summarize the additional sampling steps for the workers to reference.